

---

*Report*

# **Annette Island Preliminary Assessment**

Contract No. DTCG87-99-D-6XA018  
Task Order 1  
USCG Project No. 17-J6124

Prepared for  
**U.S. Coast Guard**

June 2000

Prepared By  
**CH2MHILL**  
301 West Northern Lights Boulevard, Suite 601  
Anchorage, Alaska 99503-2662  
(907) 278-2551



# Contents

---

Section	Page
<b>Abbreviations .....</b>	<b>vii</b>
<b>1 Introduction .....</b>	<b>1-1</b>
1.1 Project Description.....	1-1
1.2 Purpose, Objectives, and Scope of Work.....	1-6
<b>2 Environmental Setting.....</b>	<b>2-1</b>
2.1 Climate .....	2-1
2.2 Topography .....	2-3
2.3 Geology .....	2-3
2.4 Wildlife .....	2-3
2.5 Cultural Resources.....	2-3
<b>3 Sampling Activities .....</b>	<b>3-1</b>
3.1 Decontamination.....	3-2
3.2 Quality Assurance/Quality Control .....	3-2
3.3 Field Screening Results .....	3-4
3.4 Analytical Results .....	3-4
3.4.1 Soil/Sediment Samples.....	3-5
3.4.2 Paint Chip Samples.....	3-6
<b>4 Survey .....</b>	<b>4-1</b>
<b>5 PA Activities and Results.....</b>	<b>5-1</b>
5.1 Site 33B, Former USCG Storage Area .....	5-5
5.1.1 Site Description .....	5-5
5.1.2 Investigation History.....	5-5
5.1.3 PA Activities and Results .....	5-5
5.2 Site 40, Pipeline Oil/Water Separators .....	5-11
5.2.1 Site Description .....	5-11
5.2.2 Investigation History.....	5-11
5.2.3 PA Activities and Results .....	5-11
5.3 Site 44, USCG Housing .....	5-14
5.3.1 Site Description .....	5-14
5.3.2 Investigation History.....	5-14
5.3.3 PA Activities and Results .....	5-16
5.4 Site 45A, USCG Seaplane Base.....	5-18
5.4.1 Site Description .....	5-18
5.4.2 Investigation History.....	5-18
5.4.3 PA Activities and Results .....	5-18

5.5	Site 46, USCG Fire Station/Post Exchange .....	5-20
5.5.1	Site Description.....	5-20
5.5.2	Investigation History .....	5-20
5.5.3	PA Activities and Results.....	5-20
5.6	Site 47A, USCG Taxiways and Parking Circles.....	5-24
5.6.1	Site Description.....	5-24
5.6.2	Investigation History .....	5-24
5.6.3	PA Activities and Results.....	5-24
5.7	Site 68, USCG Water Treatment Plant .....	5-28
5.7.1	Site Description.....	5-28
5.7.2	Investigation History .....	5-28
5.7.3	PA Activities and Results.....	5-28
5.8	Site 69A, USCG Quarters–POL.....	5-30
5.8.1	Site Description.....	5-30
5.8.2	Investigation History .....	5-30
5.8.3	PA Activities and Results.....	5-32
5.9	Site 71A, USCG Garage–Asbestos.....	5-36
5.9.1	Site Description.....	5-36
5.9.2	Investigation History .....	5-36
5.9.3	PA Activities and Results.....	5-36
5.10	Site 72, Hangar Boiler Building .....	5-41
5.10.1	Site Description.....	5-41
5.10.2	Investigation History .....	5-41
5.10.3	PA Activities and Results.....	5-42
5.11	Site 73, Boiler Building AST .....	5-44
5.11.1	Site Description.....	5-44
5.11.2	Investigation History .....	5-44
5.11.3	PA Activities and Results.....	5-44
5.12	Site 74, USCG ASTs.....	5-45
5.12.1	Site Description.....	5-45
5.12.2	Investigation History .....	5-45
5.12.3	PA Activities and Results.....	5-45
5.13	Site 75, Hangar.....	5-49
5.13.1	Site Description.....	5-49
5.13.2	Investigation History .....	5-49
5.13.3	PA Activities and Results.....	5-55
<b>6</b>	<b>Conclusions.....</b>	<b>6-1</b>
<b>7</b>	<b>Works Cited.....</b>	<b>7-1</b>

## Appendix

A	Laboratory Analytical Data
B	GPS Survey
C	Figures and Table from Annette Island Brownfields Investigation

## Table

1-1	USCG Annette Island Site Numbers, Names, and Histories.....	1-2
3-1	USCG Soil Sample Summary for 13 Annette Island PA Sites .....	3-2
3-2	Soil Sample Field Screening Results.....	3-4
3-3	Analytical Results for Preliminary Assessment Samples.....	3-5

## Figure

1-1	Major Site Structures and Features.....	1-3
1-2	Detail of Major Site Structures and Features .....	1-4
2-1	Location and Vicinity Map .....	2-2
5-1	Site 33B USCG Storage Area .....	5-2
5-2	Site 40 Oil/Water Separator, Site 44 Housing–Site 45A Seaplane Base, Site 46 Fire Station/Post Exchange, Site 47A Taxiway/Parking Circle .....	5-3
5-3	Site 68 Water Treatment Plant, Site 69A USCG Quarters–POL, Site 71A Garage– Asbestos, Site 72 Hangar Boiler Building, Site 73 Boiler Building AST, Site 74 USCG ASTs, Site 75 Hangar.....	5-4
5-4	USCG Ammo. Storage Area .....	5-6
5-5	Airfield and Garrison Site Plot Plan.....	5-7
5-6	Seaplane Ramp Road Analytical Results.....	5-12
5-7	USCG Site Plan.....	5-15
5-8	Site Plan, Annette Island PCB Removal .....	5-53



# Abbreviations

---

ACM	asbestos-containing material
ADEC	Alaska Department of Environmental Conservation
AST	aboveground storage tank
BIA	Bureau of Indian Affairs
BTEX	benzene, toluene, ethylbenzene, and xylenes
C3	Coordinated Comprehensive Cleanup
COE	U.S. Army Corps of Engineers
DRO	diesel-range organics
ECI	environmental compliance investigation
E&E	Ecology and Environment, Inc.
EPA	U.S. Environmental Protection Agency
FAA	Federal Aviation Administration
FSP	field sampling plan
GPS	global positioning system
GRO	gasoline-range organics
HLA	Harding Lawson Associates
LRI	limited remedial investigation
µg/kg	micrograms per kilogram
µg/L	micrograms per liter
mg/kg	milligrams per kilogram
MIC	Metlakatla Indian Community
MOU	Memorandum of Understanding
OBS	oil burning specifications
OTF	on-the-fly (surveying)
PA	preliminary assessment
PAH	polycyclic aromatic hydrocarbon
PCB	polychlorinated biphenyl
PID	photoionization detector
ppm	parts per million

NA	not analyzed
ND	not detected
QA	quality assurance
QAPP	quality assurance project plan
QC	quality control
RI	remedial investigation
RRO	residual-range organics
SVOC	semivolatile organic compound
TPH	total petroleum hydrocarbons
USCG	U.S. Coast Guard
UST	underground storage tank
VOC	volatile organic compound

## SECTION 1

# Introduction

---

A preliminary assessment (PA) was completed by CH2M HILL for the U.S. Coast Guard (USCG) at 13 sites on Annette Island in southeast Alaska. CH2M HILL was contracted by the USCG to complete the PA under Contract No. DTCG87-99-D-6XA018, Task Order 1, USCG Project No. 17-J6124. In accordance with the June 1999 Coordinated Comprehensive Cleanup (C3) Plan for Annette Island prepared by the Annette Island Memorandum of Understanding (MOU) Work Group and the USCG, the USCG has taken the lead role to coordinate information gathering and planning for investigations and cleanup at 13 of the potentially contaminated sites identified on Annette Island to date by several federal agencies and the Metlakatla Indian Community (MIC). CH2M HILL completed the PA in accordance with the *Annette Island Preliminary Assessment Work Plan* prepared by CH2M HILL. The work plan included a sampling and analysis plan, quality assurance project plan (QAPP), and site health and safety plan.

Results of the PA completed for the 13 sites are presented in this report. Components of this report include a discussion of historical information available for each site and results of the site visit completed November 30 through December 2, 1999. The site visit included observations of the 13 sites and surrounding areas; collection of shallow subsurface soil samples, one sediment sample, and paint chip samples for laboratory analysis; and recording of global positioning system (GPS) coordinates for the sampling locations and other pertinent site features. Recommendations for future action at the 13 sites are presented in a separate technical memorandum completed for this project.

## 1.1 Project Description

In August 1997 the USCG, in conjunction with the Federal Aviation Administration (FAA), Bureau of Indian Affairs (BIA), and U.S. Army Corps of Engineers (COE), compiled the *Annette Island Environmental Restoration Issues* document. This document outlined the histories of the federal agencies at each of 93 sites on Annette Island and detailed the current state of environmental concerns at each site. An MOU work group was formed with representatives from the MIC, USCG, FAA, BIA, and COE. Under terms of the work group, each agency has taken a role of “primary lead agency” for certain sites. The USCG is currently the lead agency for 13 of the 93 sites. These sites are listed and described in Table 1-1. Figures 1-1 and 1-2 show the general locations of the 13 USCG sites among the 93 sites identified in the *Annette Island Environmental Restoration Issues* document. Additional site figures, maps, and photographs for each USCG site are included in Section 5.

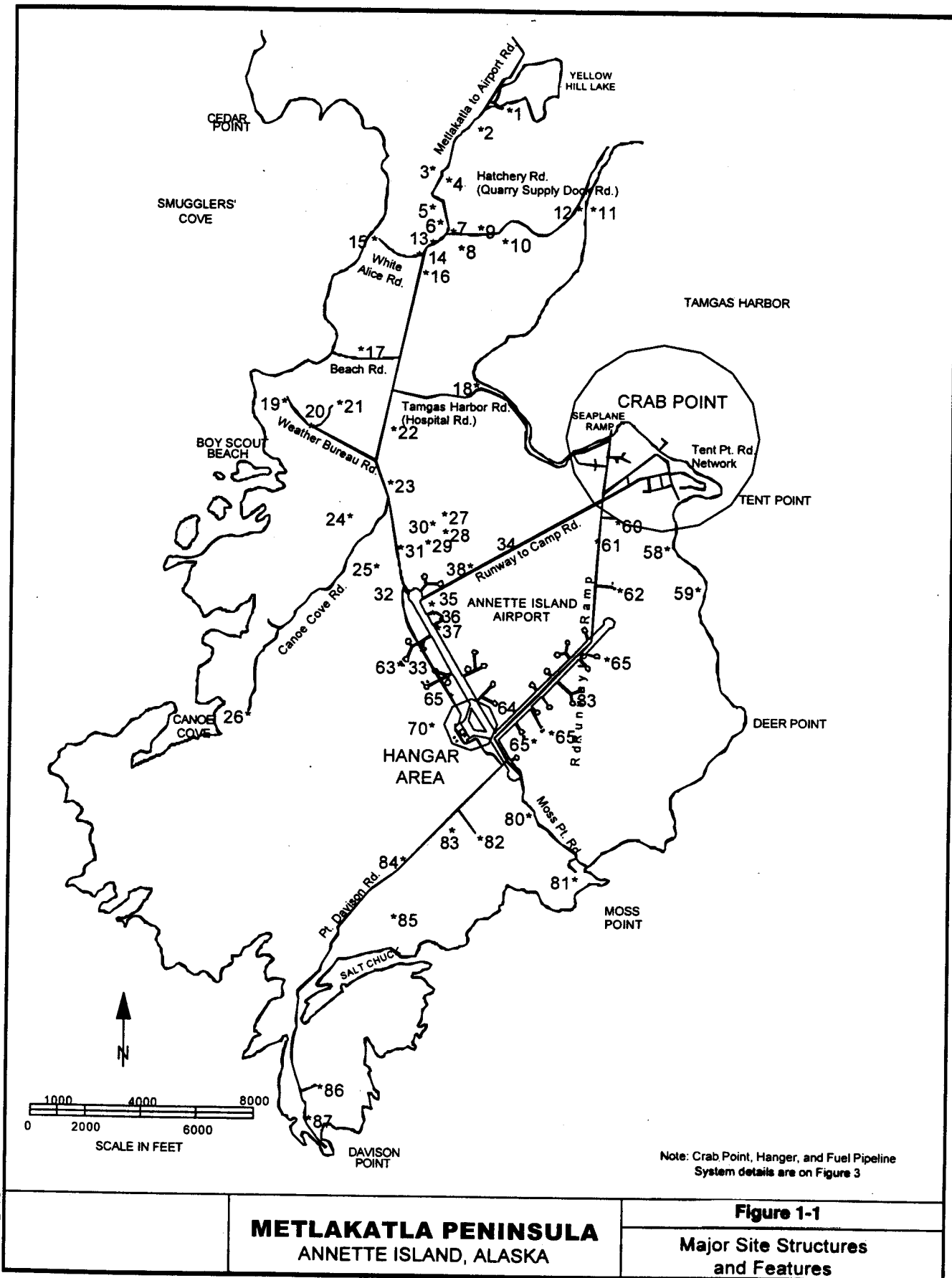
Previous record reviews, interviews, and field activities have been conducted for the 13 sites. The information obtained from those efforts indicated potential areas of environmental concern at the sites. Documents containing background information on Annette Island sites that were reviewed during this PA are listed below.

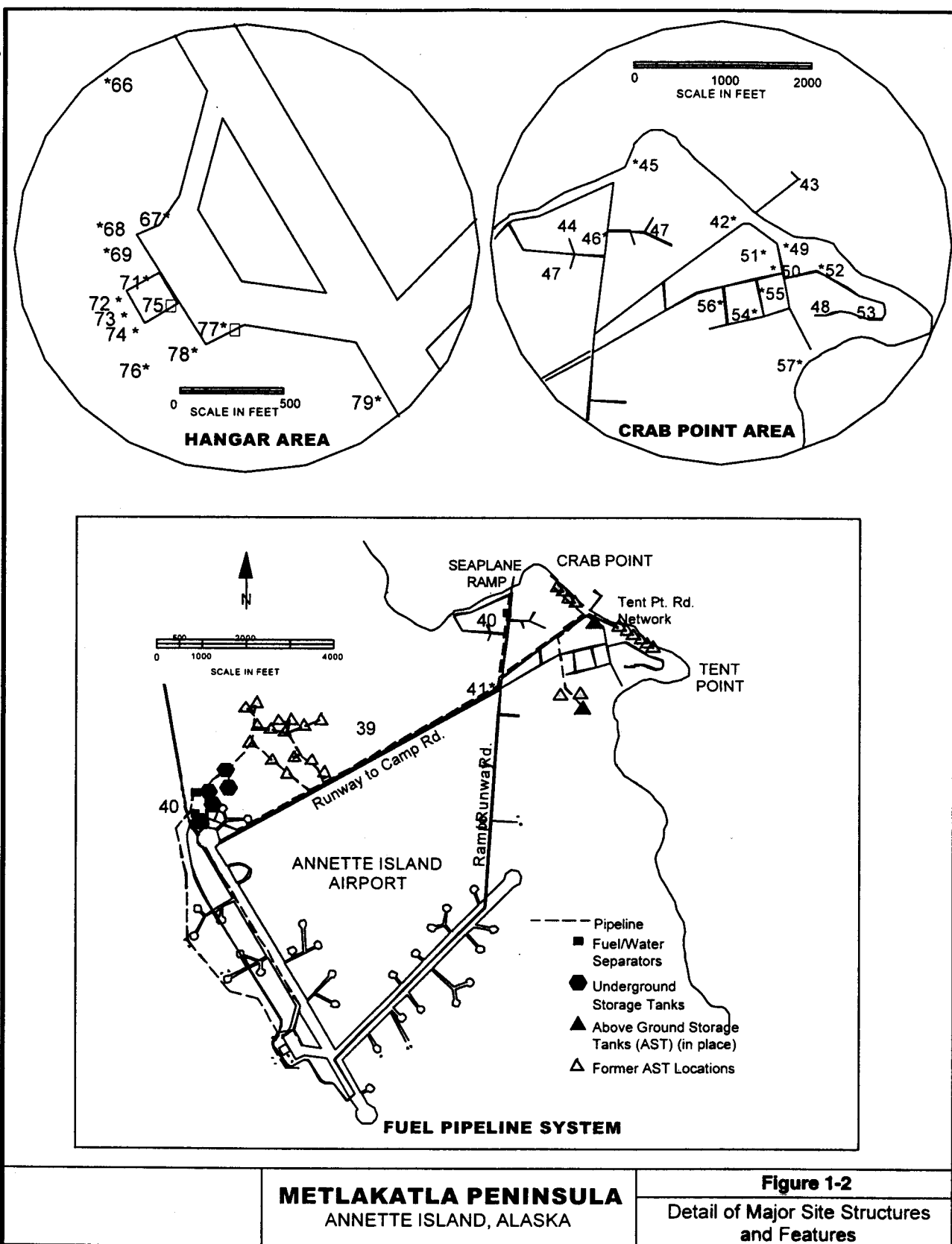
**TABLE 1-1**

USCG Annette Island Site Numbers, Names, and Histories

*USCG Annette Island PA*

Site Number	Site Name	Site History
33B	Former USCG Storage Area	Leased from the FAA by the USCG
40	Pipeline Oil/Water Separators	Used by the Navy and USCG during WWII
44	USCG Housing	Owned and operated by the USCG, property leased from FAA and the Metlakatla Indian Community (MIC)
45A	USCG Seaplane Base	Owned and operated by the USCG, property leased from FAA/MIC
46	USCG Fire Station/Post Exchange	Owned and operated by the USCG, property leased from FAA/MIC
47A	USCG Taxiways and Parking Circles	Owned and operated by the USCG, property leased from FAA/MIC
68	USCG Water Treatment Plant	Owned and operated by the USCG, property leased from FAA/MIC
69A	USCG Quarters-POL	Owned and operated by the USCG, property leased from FAA/MIC
71A	USCG Garage-Asbestos	Owned and operated by the USCG, property leased from FAA/MIC
72	Hangar Boiler Building	Owned and operated by the USCG, property leased from FAA/MIC
73	Boiler Building AST	Owned and operated by the USCG, property leased from FAA/MIC
74	USCG ASTs	Owned and operated by the USCG, property leased from FAA/MIC
75	Hangar	Owned and operated by the USCG, property leased from FAA/MIC





Source: Coordinated Comprehensive Cleanup (C3) Plan, Annette Island, Alaska. Prepared by the Annette Island MOU Work Group and the USCG. June 1999.

- *Removal Action and Remedial Investigation, Annette Island, Alaska, Final Work Plan*, Jacobs Engineering Group Inc., June 1999
- *Coordinated Comprehensive Cleanup Plan, Annette Island, Alaska*, Annette Island Working Group and USCG, June 1999
- *Final Remedial Action Report, Annette Island PCB Removal, Metlakatla, Alaska*, OHM Remediation Services Corporation, September, 1998
- *Final Report, Task Order #18, PCB Transformer Removal, Former USCG Airstation, Annette Island*. Carson Dorn, January 12, 1999
- *Metlakatla Peninsula Limited Remedial Investigation*, Ridolfi Engineers and Associates, Inc. (Ridolfi), prepared for the Metlakatla Indian Community, December 1998
- *Hazardous and Toxic Waste Report, Phase II Field Investigation, Annette Island Landing Field, Annette Island, Alaska*, Ecology and Environment, Inc. (E&E), March 1990
- *Preliminary Assessment, Metlakatla Peninsula*, Ridolfi, October 1996
- *Annette Island Brownfields Site Assessment Report*, E&E, June 1999
- *Remedial Investigation Report, Annette Island Remedial Investigation, Annette Island, Alaska*, DOWL/Ogden Joint Venture, August 1999
- *Site Assessment Report, U.S. Coast Guard Former Facilities, Annette Island, Alaska*, Harding Lawson Associates (HLA)/Wilder JV, July 30, 1999
- *Annette Island Environmental Restoration Issues*, FAA, BIA, COE, USCG, August 1997
- *Metlakatla Peninsula Asbestos Inventory and Abatement Plan*, Ridolfi, June 30, 1998
- *Metlakatla Peninsula Lead-Based Paint Investigation*, Ridolfi, June 30, 1998
- *Metlakatla Peninsula Asbestos Abatement Phase I Closure Plan (Draft)*, Ridolfi, July 30, 1999
- *Defense Environmental Restoration Account Inventory Report for Annette Island Landing Field, Alaska*, Sverdrup & Parcel and Associates, Inc., January 1986
- *Trip Report, FAA Nonhazardous and Hazardous Materials Removal/Disposal Project, Annette Island FAA Station, Annette Island, Alaska*, Ecology and Environment, Inc., June 1995
- *Site Cleanup and Investigation Report, Volume 1, Expanded Site Investigation/Interim Cleanup, Annette Island FAA Station, Annette Island, Alaska*, E&E, May 1995
- *Trip Report, FAA Hazardous Waste Removal/Disposal Project, Annette Island FAA Station, Annette Island, Alaska*, E&E, February 1993
- *Environmental Compliance Investigation Report, Annette Island FAA Station, Annette Island, Alaska*, E&E, May 1992
- *Field Investigation Report, Phase II Field Investigation, Former DOD Sites, Annette Island Landing Field, Annette Island, Alaska*, E&E, November 1989

- *Overview of Environmental and Hydrogeologic Conditions at Nine Coastal and Island Sites in South-Central and Southeast Alaska, USGS Open-File Report 95-404*, Eppie V. Hogan, 1995

## 1.2 Purpose, Objectives, and Scope of Work

The goal of this project was to complete a PA of the 13 sites for which the USCG is the lead agency for the following purposes:

- Identify areas of actual or potential contamination from past practices and site use with particular emphasis on the following:
  - Petroleum contamination–Determine the potential location of past spills of petroleum products and evaluate the potential current level of soil contamination.
  - Polychlorinated biphenyls (PCBs)–Assess the possible locations of PCB contamination and PCB-containing materials, such as abandoned electrical transformers.
  - Solid waste–In addition to assessing the locations of abandoned transformers, assess the possible locations of fuel tanks, fuel pipelines, and abandoned drums that may be above or below ground at each site.
  - History–Develop a history for each site as a summary of past documented activities.
- Develop recommendations and preliminary cost estimates for further field investigation or remediation efforts to address identified areas of environmental concern.

Information gathered during the PA and results for each of the 13 sites are presented in the following sections. The information includes a description of the general environmental setting of Annette Island presented in Section 2, a summary of field activities completed during the PA site visit in Sections 3 and 4, and results of the PA for each site presented in Section 5. The results for each site include a summary of past investigations and other known historical information about the site, maps and photographs of each site, and results of updated information obtained during the site visit, including analytical data for samples that were collected. Conclusions for each site, based on information obtained during the PA, are presented in Section 6. Recommendations for future investigation, remediation, or site closure for the sites have been developed and submitted to the USCG in a separate document.

## SECTION 2

# Environmental Setting

---

Annette Island is about 700 miles northwest of Seattle, Washington, and 15 miles south of Ketchikan in southeast Alaska (Figure 2-1). The island is the home of the Metlakatla Indian Community. The 200-square-mile island was declared an Indian Land Reserve in 1891 and is the only reservation in the state of Alaska. The Annette Island PA project sites are in an area on the southern portion of the island that encompasses about 16.7 square miles (10,700 acres). The legal description for the project sites encompasses all or portions of the following:

- Township 78 South, Range 92 East, Sections 20, 21, 28-34
- Township 79 South, Range 91 East, Sections 12 and 13
- Township 79 South, Range 92 East, Sections 3-10 and 16-20

The following sections describe the environmental setting of the project sites.

## 2.1 Climate

The Metlakatla Peninsula lies in the temperate maritime coastal climate typical of southeastern Alaska. Relatively warm winters, cool summers, and heavy precipitation characterize this area. Average winter temperatures range from 30°F to 45°F, and summer temperatures range from 42°F to 62°F. Annette Island Weather Bureau records indicate an average annual precipitation of 103 inches, which includes an average snowfall of 12 inches or less. Low cloud cover, including foggy conditions and poor visibility, is present approximately 70 percent of the year. Recorded wind information indicates that the mean wind speed is approximately 12 miles per hour, and winds are predominantly from the south-southeast. Higher winds can occur with winter storms; sustained winds above 30 miles per hour are common in January and February. Storms with winds over 100 miles per hour occur on occasion (Ridolfi, 1996).



Source: Coordinated Comprehensive Cleanup (C3) Plan, Annette Island, Alaska. Prepared by the Annette Island MOU Work Group and the USCG. June 1999.

## 2.2 Topography

The Metlakatla Peninsula is relatively flat and mostly between sea level and 100 feet above mean sea level. Numerous lakes, marshes, bogs, and other typical lowland features are found throughout the peninsula. The flat grades and numerous lakes were formed in part by glacial processes during the Pleistocene epoch; the last glacial retreat was nearly 10,000 years ago. Except for Canoe Cove, the Village Point, and Tamgas Harbor, most of the coastline is irregular and rocky (Ridolfi, 1996).

## 2.3 Geology

Annette Island is in the northern region of the Cordilleran mountain range, a mountain system that extends along the western coastline of North America from southern California to the Alaska Peninsula. The bedrock underlying Annette Island consists of igneous and metamorphic rocks of late Paleozoic to early Mesozoic age.

Organic and alluvial sedimentary deposits ranging in depth from 4 to 25 feet dominate the surface geology of the peninsula. These deposits include emergent shoreline, modern shore and delta deposits, alluvium, muskeg, and other organic deposits, as well as artificial fill brought in to allow construction of roads and other features. The surface soils generally consist of poorly drained, sandy gravels mixed with clays and decomposed organic matter (Ridolfi, 1996).

## 2.4 Wildlife

Wildlife identified on the Metlakatla Peninsula includes wolves, beaver, Sitka black-tailed deer, and red squirrels and other small mammals. Avian species include grouse, ptarmigan, bald eagle, blue heron, and numerous species of waterfowl. The only federally listed endangered species present is the humpback whale. Bald eagles nest in snags and other high locations along the southeastern Alaskan coastline. Humpback whales typically pass through the waters near Annette Island as they migrate to and from summer feeding and winter breeding grounds (Ridolfi, 1996). Sockeye and chinook salmon migrate through the area.

## 2.5 Cultural Resources

On the basis of information from the Alaska Heritage Resources Survey included in previous Annette Island reports, there are no cultural resources that have been formally identified and recorded for the area encompassed by the former Annette Island airbase on the Metlakatla Peninsula (Ridolfi, 1996). However, culturally important sites and resources for the MIC may exist within the project sites.



## SECTION 3

# Sampling Activities

---

Field sampling during the PA was conducted in accordance with the field sampling plan (FSP) and QAPP contained in the project work plan. Sampling activities consisted of collecting shallow subsurface soil samples, paint chip samples, and one sediment sample. Samples were collected to fill existing data gaps by evaluating whether contamination exists in potential areas of concern. Samples were collected from each site based on visual observations and direction from the onsite USCG technical representative.

Before the field sampling was conducted, a Metlakatla Power and Light line worker reviewed maps showing the 13 sites and potential sampling locations. The line worker confirmed that no active underground utilities that could be affected by the planned PA fieldwork were at the sites. All sampling areas were cleared by Metlakatla Power and Light for collecting surface and shallow subsurface (less than 2-foot depth) soil and sediment samples.

No waste oil or abandoned drum contents were encountered during the fieldwork. Therefore, no samples were collected for oil burning suite analyses.

All shallow subsurface soil samples were collected by first manually advancing a shovel to an approximate 12- to 18-inch depth to open an excavation. Soil samples were then collected with dedicated stainless steel spoons by scraping farther into the bottom of the exposed hole. The single sediment sample collected at Site 33B was collected from a zero- to 4-inch horizon.

All paint chip samples were collected by scraping paint off an interior building wall or structural beam and into a 1-quart resealable plastic bag for shipment to the laboratory. Paint scraping was performed with dedicated stainless steel spoons. In all cases, existing paint was observed peeling on sections of the wall surfaces; samples were collected by scraping the peeling paint into the sample bag.

In accordance with the FSP, soil samples that were collected for analyses of benzene, toluene, ethylbenzene, and xylenes (BTEX) and gasoline-range organics (GRO) were first removed from the sampler, immediately placed in an appropriate sample container, and immersed in methanol. The remaining soil was placed into a resealable bag and composited before sample containers were filled. Remaining soil samples that were not packaged for shipment to the laboratory remained sealed in their respective bags, were heated for approximately 15 minutes, and then field screened with a photoionization detector (PID). All sample containers destined for the laboratory were placed in a cooler and maintained at temperatures of about 4°C for shipment to the laboratory under chain-of-custody procedures. These sampling efforts followed U.S. Environmental Protection Agency (EPA) and Alaska Department of Environmental Conservation (ADEC) guidelines for quality assurance (QA) and quality control (QC) that were described in the QAPP.

Total sample quantities submitted for offsite analysis and the analytical methods are summarized in Table 3-1. Samples were submitted to Analytica Alaska, Inc., for analyses.

**TABLE 3-1**  
USCG Soil Sample Summary for 13 Annette Island PA Sites  
*USCG Annette Island PA*

Sample Type	Method	Field Samples	Duplicate Samples	Trip Blank	Equipment Blank	Total
<b>Soil Samples</b>						
DRO/RRO	AK102/103	7	1	0	0	8
GRO/BTEX	AK101/8021	7	1	1	0	9
Lead	EPA 6010B	3	1	0	0	4
PCB	EPA 8082	1	0	0	0	1
<b>Paint Chip Samples</b>						
Lead	EPA 6010B	5	1	0	0	6
PCB	EPA 8082	2	1	0	0	3

**Notes:**

DRO/RRO: Diesel-range organics/residual-range organics

GRO/BTEX: Gasoline-range organics/benzene, toluene, ethylbenzene, and total xylenes

PCB: Polychlorinated biphenyls

EPA: U.S. Environmental Protection Agency

## 3.1 Decontamination

The objective of decontaminating sampling equipment is to prevent the introduction of contamination into samples from sampling equipment.

All samples were collected with dedicated, pre-cleaned, stainless steel spoons. Spoons were used for the collection of one sample and discarded. Subsequently, no decontamination of sampling equipment was required and an equipment blank was not collected.

## 3.2 Quality Assurance/Quality Control

Sampling efforts for this project were conducted in accordance with EPA and ADEC guidelines for QA/QC that are described in the project-specific QAPP. The analytical results for 13 soil, sediment, and paint chip samples collected on December 1, 2000 were subjected to a QA/QC review that included the following:

- Chain of Custody
- Holding Time
- Method Blank Review
- Laboratory Duplicate Review
- Surrogate Review
- Spike/Spike Duplicate Review
- Detection Limits

Samples were selectively analyzed for GRO/BTEX, DRO/RRO, PCBs, and total lead. The samples were analyzed by Analytica Alaska, Inc. in Anchorage, Alaska and Broomfield, Colorado.

The level of reporting from Analytica was Level I, which includes sample and method blank results, field QC sample results, and surrogate recoveries. Other quality control data (such as spike recoveries), chromatograms, and quantitation reports were not required in the data deliverable and were not requested. Consequently, results of spike recovery results were not reviewed and calculations from raw data were not verified.

The analytical report also did not include instrument performance check results or calibration data. This data was not required in the Level I deliverable. The laboratory case narrative stated that all acceptance criteria for calibrations, method blanks, surrogates, spikes, and samples were met and that all analyses proceeded normally.

### **Holding Times**

Holding time criteria monitor sample integrity that may be compromised over time. All soil, sediment, and paint chip samples were analyzed within their holding time requirements.

### **Sample Handling**

Proper sample handling and chain-of-custody procedures help monitor the integrity of the samples.

The chain-of-custody and laboratory case narrative were reviewed to determine if any sample handling procedures might affect the integrity of the samples and the quality of the resulting data.

Samples sent to Analytica were shipped in one cooler. The temperature inside the cooler was 4.0°C. This temperature is within the acceptable limits of 4°C +\ - 2°C.

### **Method Blanks**

Method blank criteria monitor the existence and magnitude of contamination resulting from sample handling processes and/or instrument carryover.

No analytes of interest were detected above their reporting limit in the method blanks associated with the project samples.

### **Sensitivity**

Sensitivity criteria monitor achievement of method reporting limits.

All samples met their respective method reporting limits.

### **Surrogate Spike Recovery**

Surrogate spike recovery monitors instrument specificity and accuracy.

No discrepancies were noted in which surrogate recovery values were outside the higher or lower acceptance levels.

### Field QA/QC

Field QA/QC monitors for sample contamination and overall sampling and analytical precision. Field duplicates were the field QA/QC samples.

### Field Duplicates

One field duplicate soil and paint chip samples were collected. This frequency meets the QA/QC minimum requirement of one duplicate sample per 10 field samples collected.

## 3.3 Field Screening Results

Soil samples collected for laboratory analyses were field screened with a PID by using the headspace technique. Sample material was sealed in a plastic bag and warmed for approximately 15 minutes. The bag was then unsealed enough to insert the PID probe and the maximum reading was recorded. Field screening results are detailed in Table 3-2.

**TABLE 3-2**  
Soil Sample Field Screening Results  
*USCG Annette Island PA*

Site Number	Sample Number	PID Result
69A	69A99SL05	1.7
69A	69A99SL06	1.4
74	7499SL09	0.3
74	7499SL10	0.3
74	7499SL11	429
74	7499SL12	8.8
46	4699SL14	NA
45A	45A99SL15	0.8

**Notes:**

All samples were field screened on December 1, 1999.

All samples collected from 12-18 inches.

All field screening result unit values are ppm (parts per million).

NA: Not analyzed.

## 3.4 Analytical Results

Test results for diesel-range organics (DRO), residual-range organics (RRO), GRO, BTEX, lead, and PCBs in soil samples and for PCBs and lead in paint chip samples collected during the PA field activities are presented in Table 3-3. Test results are summarized in the following paragraphs. The full laboratory data package is included in Appendix A.

**TABLE 3-3**  
Analytical Results for Preliminary Assessment Samples  
*USCG Annette Island PA*

Site Number	Sample Number	EPA 8082	EPA 6010B	AK 103	AK 102	AK 101	EPA 5030/8021: BTEX			
		PCB	Lead	RRO	DRO	GRO	Benzene	Toluene	Ethylbenzene	Total Xylenes
Soil and Sediment										
69A	69A99SL05	NA	NA	41	170	ND (2.1)	ND (.021)	ND (.021)	ND (.021)	ND (.021)
69A	69A99SL06	NA	NA	13	7.3	ND (2.0)	ND (.020)	ND (.020)	ND (.020)	ND (.020)
74	7499SL09	NA	13	130	37	ND (3.0)	ND (.030)	ND (.030)	ND (.030)	ND (.030)
74	7499SL10	NA	19	100	34	ND (2.1)	ND (.021)	ND (.021)	ND (.021)	ND (.021)
74	7499SL11	NA	380	ND (8.9)	13,000	1,000	ND (.27)	ND (.27)	1.0	1,000
74	7499SL12	NA	24	570	200	ND (3.4)	ND (.034)	ND (.034)	ND (.034)	ND (.034)
33B	33B99SD13	NA	NA	4,000	1,100	ND (23)	ND (.23)	ND (.23)	ND (.23)	ND (.023)
46	4699SL14	ND (.018)	NA	NA	NA	NA	NA	NA	NA	NA
45A	45A99SL15	NA	NA	23	ND (4.5)	ND (2.1)	ND (.021)	ND (.021)	ND (.021)	ND (.021)
Paint Chip										
75	7599PT01	0.700 (Aroclor 1254)	37,000							
75	7599PT02	NA	6,200							
75	7599PT03	0.850 (Aroclor 1254)	25,000							
75	7599PT04	1.0 (Aroclor 1254)	49,000							
68	6899PT07	NA	21,000							
71A	71A99PT08	NA	490							

**Notes:**

All samples collected December 1, 1999.

All soil/sediment samples collected from 12-18 inches except 33B99SD13, which was a sediment sample collected from 0-4 inches.

All analytical result unit values are mg/kg (dry weight).

NA = Not analyzed

ND( ) = Not detected (reporting limit)

### 3.4.1 Soil/Sediment Samples

- DRO was detected in seven of eight samples to a maximum 13,000 milligrams per kilogram (mg/kg).
- RRO was detected in seven of eight samples to a maximum 4,000 mg/kg.
- GRO was detected in one of eight samples at 1,000 mg/kg.
- Benzene was not detected in any samples.
- Total BTEX was detected as ethylbenzene and total xylenes in one of eight samples at a maximum value of 1,000 mg/kg (xylenes).
- PCBs were not detected in the one soil sample analyzed for PCBs.

- Lead was detected in all four soil samples submitted for lead analysis to a maximum 380 mg/kg.

### **3.4.2 Paint Chip Samples**

- Lead was detected in all paint chip samples at concentrations ranging from 490 mg/kg to 49,000 mg/kg.
- PCBs were detected in the three paint chip samples submitted for PCB analysis at concentrations ranging from 0.7 mg/kg to 1 mg/kg.

## SECTION 4

# Survey

---

Horizontal and vertical positions of soil sample locations and other points of interest were documented by establishing GPS survey coordinates. Additional permanent and recognizable site features were also surveyed to establish local swing-tie measurements to easily establish sampling locations at a later date.

Points were surveyed by using kinematic survey methods. Kinematic (stop and go) surveying involves the establishment of a “base” and “rover” unit that are used in conjunction to acquire survey points. The base receiver is positioned above a known survey benchmark and its coordinates are entered. The field crew may then use the rover unit to establish the desired survey coordinates based on the known position of the base station.

Kinematic surveying uses GPS phase measurements from four or more satellites common to both the base and rover receivers. To achieve centimeter-level precision the survey must first be initialized. On-the-fly (OTF) surveying was the method chosen to survey points for the USCG Annette Island PA. OTF is a precise form of kinematic surveying that requires communication with five or more satellites to maintain initialization and allows for the rapid collection of survey coordinates in the field.

All survey points collected were initialized and the instruments were properly calibrated. The vertical accuracy for all points is within 0.04 foot and the horizontal accuracy is within 0.02 foot. A total of 90 survey points were gathered during field activities. All the points and their respective coordinates are listed in Appendix B.



## SECTION 5

# PA Activities and Results

---

The following subsections provide a general description; a summary of past investigations, cleanups, and other studies completed; and a description of activities completed at each site evaluated during this PA. The general locations of the 13 sites are shown in Figures 5-1 through 5-3. Additional figures, tables, and photographs that are included for each site show past site conditions, sampling locations and analytical data, and the site conditions, sampling locations, and analytical results from this PA.



155538.A1.SA Site33b 01/03/00 ancfjb

Aerial photograph Annette Island used by permission. ©Copyright AeroMap U.S., 1995.

**Figure 5-1**  
**Site 33B USCG Storage Area**



Aerial photograph Annette Island used by permission. ©Copyright AeroMap U.S., 1995.

**Figure 5-2**

**Site 40 Oil/Water Separator  
Site 44 Housing - Site 45A Seaplane Base  
Site 46 Fire Station/Post Exchange  
Site 47A Taxiway/Parking Circle**



Aerial photograph Annette Island used by permission. ©Copyright AeroMap U.S., 1995.

**Figure 5-3**

**Site 68 Water Treatment Plant**  
**Site 69A USCG Quarters - POL**  
**Site 71A Garage - Asbestos**  
**Site 72 Hangar Boiler Building**  
**Site 73 Boiler Building AST**  
**Site 74 USCG ASTs**  
**Site 75 Hangar**

## 5.1 Site 33B, Former USCG Storage Area

### 5.1.1 Site Description

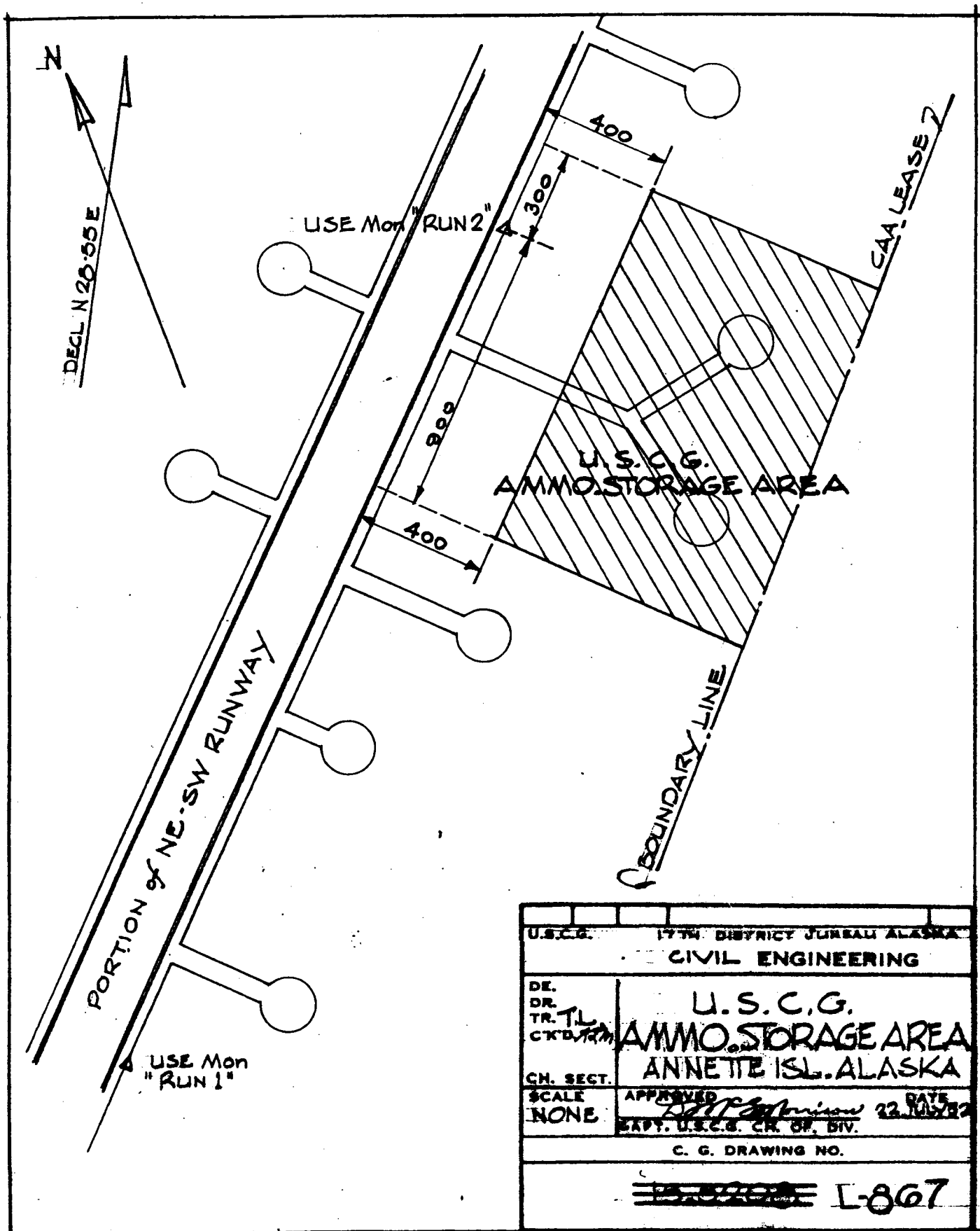
Site 33B is a former USCG storage area situated off of runway B of the former landing field. Runway B is gravel, approximately 6,000 feet in length, and oriented in a northeast to southwest direction. The site was leased by the USCG from the Civil Aeronautics Administration (pre-FAA). The site is shown as “Ammo. Storage Area” on a 1952 USCG map (Figure 5-4). The boundaries of the site are shown on that map as a rectangular area approximately 800 by 1,200 feet, 400 feet off of the NE-SW runway (runway B). The lease area shown in the map includes a taxiway and two parking circles off the south side of runway B. In a 1946 COE plot plan (Figure 5-5) and the *Environmental Restoration Issues* (FAA, 1997), revetments H-38, H-39, and H-40 are shown within the area. Site 33B is also shown in a 1961 FAA real estate data map. Information on the types of activities conducted by the USCG at this site, years of use, and any reported releases of hazardous substances from the site was not found during the file research conducted during this PA. The “Ammo. Storage Area” label on the 1952 USCG map implies the area was used, or intended for use, for storage of ammunition. The *Environmental Restoration Issues* document describes approximately 200 abandoned drums at revetment H-40. Revetment H-40 was included among several areas around Annette Island where abandoned drums had been observed. The drums were described in the document as abandoned by the U.S. Navy, the U.S. Air Force, and the BIA, the latter of which used tar from 55-gallon drums to pave some of the area roads (FAA, 1997).

### 5.1.2 Investigation History

According to file information reviewed for this PA, no previous sampling had been conducted within this area before 1999. In summer 1999, contractors for the COE conducted removal actions and a remedial investigation (RI) at several sites on Annette Island, including Site 33B. During that work, abandoned drums at Site 33B were collected and removed, and soil, sediment, surface water, and groundwater samples were collected. Preliminary results from that fieldwork indicate that 8 clean drums and 141 waste drums were removed from the site. The waste drums contained asphalt thought to be left over from runway construction activities during World War II. Preliminary analytical results indicate that analytes exceeding screening criteria used for the RI exist at the site. According to the COE, complete results of the drum removal and RI will be included in a final report due to be completed in mid-2000.

### 5.1.3 PA Activities and Results

The USCG storage area was observed during the PA site visit to document current conditions. Remains of the three former revetments and several areas surrounding the two gravel parking circles where sampling occurred during the 1999 COE investigation (indicated by stakes and colored flagging with sample ID numbers) were observed. In addition, several junked cars, car parts and other debris, such as junked household appliances, were observed at the revetment H-38 area. 55-gallon drums were also observed in the wetlands off the two parking circles. Recent construction of a wooden target range was observed attached to the remains of revetment H-40, and recently spent shell casings





were observed scattered on the ground in the vicinity of the target range. Solidified asphalt, presumably from drums that had been abandoned off the side of the parking circling containing revetment H-40, was also observed on the gravel pad and in the adjacent wetlands. Remains of revetment H-39 only included scattered wooden debris. Photographs 1 through 4 show the site conditions at site 33B at the time of the PA site visit.

Sampling at Site 33B was limited during this PA because the site had just been sampled by COE contractors during the drum removal and RI. One sediment sample (33B99SD13) was collected approximately 10 feet from the southern side of the revetment H-40 parking circle, in a vegetated area within the asphalt remains. The sample was analyzed for GRO, DRO, RRO, and BTEX.

Results of the sample collected at Site 33B indicate 1,000 mg/kg of DRO and 4,000 mg/kg of RRO in sediments collected at zero to 4 inches. The sample contained highly organic matter and biogenic activity in the sample matrix may have contributed to the results.

The sediment sample location and the stakes from the 1999 drum removal and RI that were found throughout Site 33B were surveyed, and the information written on labels affixed to the stakes was recorded. The existing groundwater monitoring point observed at revetment H-40 was also surveyed. Other than abandoned drums and the visible asphalt remains at revetment H-40, no other visible signs of past releases of hazardous substances were observed at Site 33B during the PA site visit.



**Photograph 1.** Revetment H-38 gravel pad. View looking south.



155538.A1.RP PhotoPages.fh8 06/23/00 anc/jb

**Photograph 2.** Remains of storage structure at Revetment H-38. View looking south. Stake with flagging from 1999 RI visible in water (foreground).



**Photograph 3.** Remains of storage structure and recently built target range at Revetment H-40. View looking south.



**Photograph 4.** Revetment H-40 gravel pad. View looking south. Sample 33B99SD13 collected off far side of gravel pad.

## 5.2 Site 40, Pipeline Oil/Water Separators

### 5.2.1 Site Description

For purposes of this PA, the USCG has defined Site 40 as the oil/water separator vault north of Site 46 (Fire Station/Post Exchange) and adjacent to the Seaplane Ramp Road. Figure 5-6 shows the approximate location of the separator. At this site, remains of an oil/water separator consist of a concrete vault that contains a large tank, metal piping, gauges, and valves.

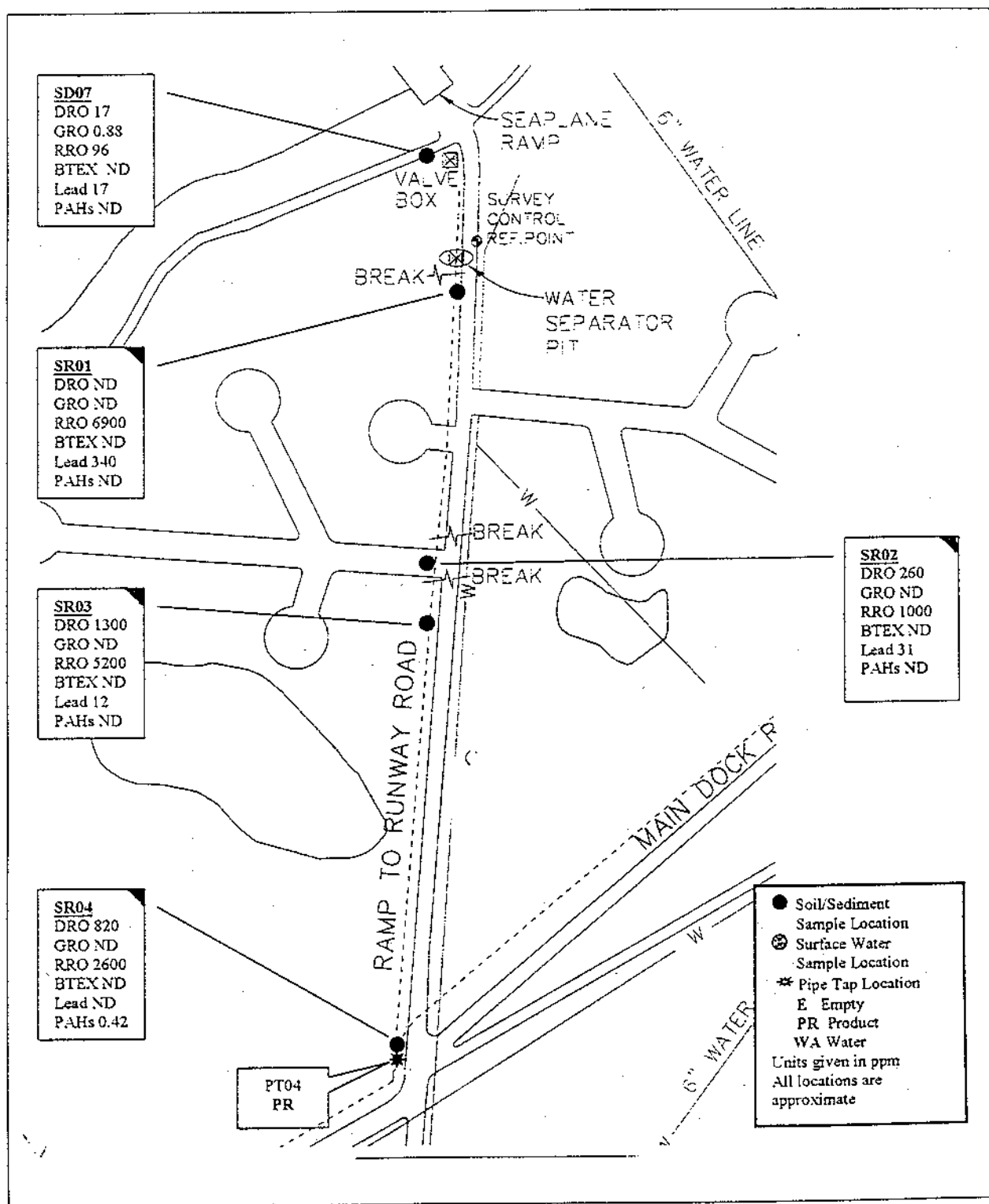
### 5.2.2 Investigation History

A discussion and photographs of Site 40 were included in the 1996 PA. No sampling had been performed at this site before 1998, according to record reviews completed for this PA. In 1998, contractors for the COE conducted an RI at seven sites on Annette Island, including the water separator pit at Site 40. Results of the RI are presented in *Remedial Investigation Report, Annette Island Investigation, Annette Island, Alaska* (DOWL/Ogden Joint Venture, 1999). At the time of the RI, the water separator pit was open and full of debris. The debris consisted of rusting metallic items, household goods, and cut logs, which were decaying. An attempt to tap a pipe within the pit revealed open valves and corroded pipe. The entrance and exit points in the separator pit did not contain piping (DOWL/Ogden Joint Venture, 1999). During the RI, a sediment sample was collected from the bottom of the separator pit. The sample was analyzed for GRO, DRO, RRO, BTEX, polycyclic aromatic hydrocarbons (PAHs), and lead. GRO and DRO were not detected in the sample, and RRO was reported at 6,900 mg/kg. The RI report noted that the DRO was not detected when a detection limit of less than 950 mg/kg was used because of the dilution used in the sample. The report states that because of the results at the other sampling locations for the RI, the separator pit location would also be expected to have elevated levels of DRO. BTEX and PAHs were not detected, and lead was reported at 340 mg/kg (DOWL/Ogden Joint Venture, 1999). The location of the water separator pit and results of the sampling (sample SR01) as presented in the 1999 RI Report are shown in Figure 5-6.

### 5.2.3 PA Activities and Results

The oil/water separator was observed during the PA site visit. The cement vault was open, and standing water was observed in the bottom of the pit. The remains of a tank and valves and the decaying logs reported during the 1998 RI were seen. The floor of the separator pit was confirmed to be concrete; however, the water in the pit prevented a visual inspection of the concrete floor conditions. The pit has been open for many years, and there is no record that it has been emptied in the past. The relatively low water level observed in the pit during the PA indicates that the pit is not water-tight. Because the separator had already been sampled during the 1998 RI, no additional samples were collected during the PA site visit. Photographs 5 and 6 show the separator pit at the time of the PA site visit. The location of the pit was surveyed, and visual observations around the pit area did not detect any additional potential sources of contamination associated with this site.

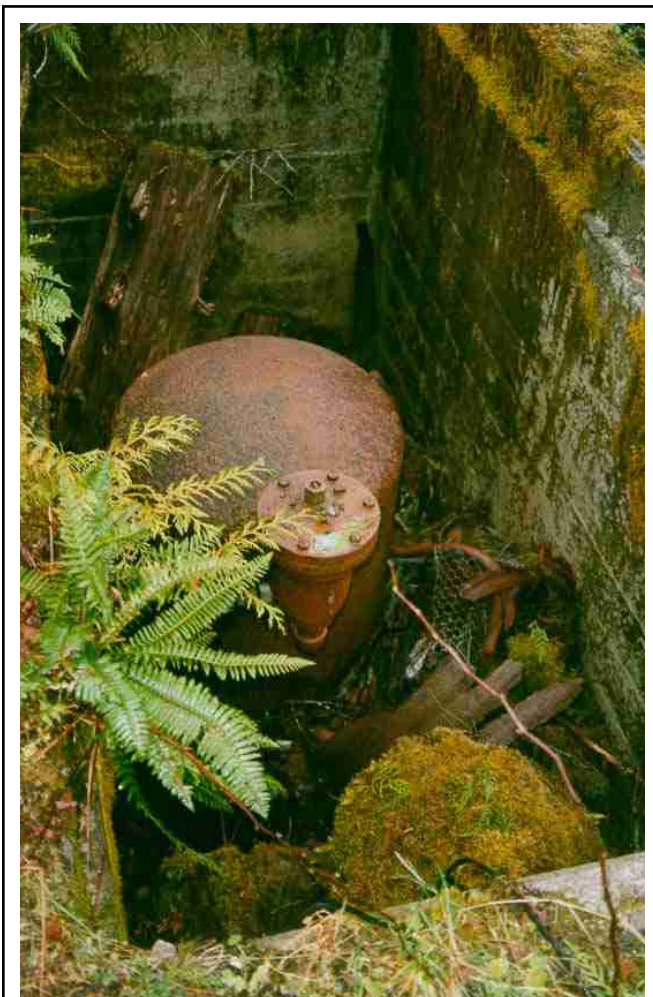
Source: DOWL/Ogden Joint Venture, Remedial Investigation Report, Annette Island Remedial Investigation, Annette Island, Alaska, August 1999.



**Figure 5-6**  
Seaplane Ramp Road Analytical Results



**Photograph 5.** Interior of water separator pit.



155538.A1.RP PhotoPages.fh8 01/03/00 anc/jb

**Photograph 6.** Interior of water separator pit.

## 5.3 Site 44, USCG Housing

### 5.3.1 Site Description

Remains of the USCG housing consist of twelve 4,000-square-foot (40-foot by 100-foot) foundations west of the former seaplane ramp and two larger (40-foot by 150-foot) concrete foundations east of the former seaplane ramp. All 14 of the residential buildings were moved intact off the island when USCG operations were removed from Annette Island in 1977. Figure 5-2 shows the areas where the buildings were before 1977.

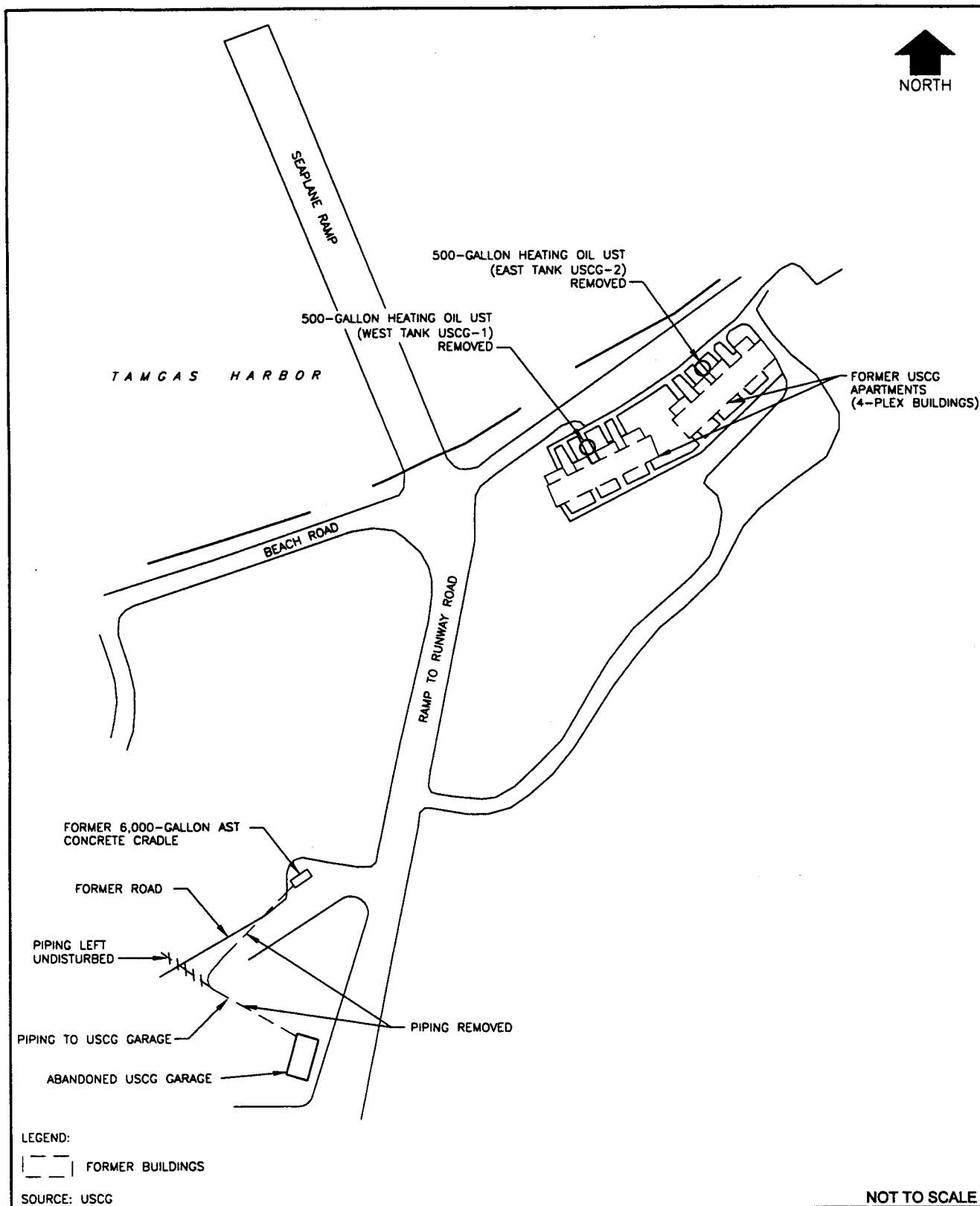
### 5.3.2 Investigation History

The two larger buildings had associated heating oil underground storage tanks (USTs) near their foundations. During the 1997 limited remedial investigation (LRI), one UST at this site was sampled. A soil sample was collected from around the fill pipe of the northern UST at 6 to 8 inches below ground surface. The sample exhibited no obvious surface or subsurface staining or odor. Analytical results for this sample indicated a DRO concentration of 96 mg/kg, a RRO concentration of 35 mg/kg, and a lead concentration of 6 mg/kg. The northern UST contained 6 inches of product on 20 inches of water, and the southern UST had 2 inches of product on 6 inches of water (Ridolfi, 1998c).

The heating fuel source for the other 12 residential sites was a 6,000-gallon aboveground storage tank (AST) located north of the fire station/post exchange building (see Figure 5-7). The tank is no longer there and only the concrete saddles remained during the LRI. No visible staining or odor was reported during the 1997 LRI. One soil sample was collected 5 feet from the base of the south saddle, near exposed copper piping. This sample had a DRO concentration of 740 mg/kg, an RRO concentration of 18 mg/kg, and a lead concentration of 3 mg/kg (Ridolfi, 1998c).

After the LRI, contractors for the COE completed a site characterization and assessment at each tank location, and in October 1998 the two USTs and associated piping and the associated piping and concrete saddles for the former AST were decommissioned by COE contractors. Residual fluids were removed from the USTs, the USTs and all associated piping were excavated and removed, and contaminated soil above cleanup action levels was excavated and removed. Approximately 300 feet of piping associated with the former AST and the concrete saddles was also excavated and removed. According to results presented in the July 30, 1999 site visit, assessment report prepared by HLA/Wilder JV, soil confirmation samples collected from the limits of the excavations indicated no remaining contamination above cleanup levels. The report recommended no further soil removal at the UST and AST sites (HLA/Wilder JV, 1999).

Site 44 was included in the asbestos survey and inventory completed in 1997. Scattered remains of cementitious water pipes and transit wallboard that were found within the general vicinity of the former USCG buildings were tested for asbestos and determined to be asbestos-containing materials (ACM). Results of the survey at this location are included in the *Metlakatla Peninsula Asbestos Inventory and Abatement Plan* (Ridolfi, 1998b).



**WILDER**

**Harding Lawson Associates/  
 Wilder Construction Company**  
 Joint Venture

**USCG Site Plan**

Site Assessment Report  
 Annette Island, Alaska

DRAWN  
 WE

PROJECT NUMBER  
 42003

APPROVED  
 WTH

DATE  
 8/99

FILE NAME  
 000h

**Figure 5-7**

FIGURE

**3**

### 5.3.3 PA Activities and Results

The results of the 1998 UST and AST removal and cleanup activities indicated that no remaining contamination from past fuel storage at Site 44 above cleanup levels is present.

Therefore, no sampling was completed at this site during the PA site visit. The building foundations that are still present, the two former UST locations, and the former AST saddles were surveyed. The area to the west of the former seaplane ramp, where the 12 building foundations are located, and along the shoreline downgradient of the area, was visually inspected for any signs of remaining abandoned fuel lines or other evidence of remaining petroleum contamination. No fuel lines or visible evidence of fuel contamination were observed. Photographs 7 and 8 show the Site 44 areas observed during the PA site visit.



**Photograph 7.** Former location of USCG housing units. View looking south toward Site 46.



**Photograph 8.** Concrete saddles left at former AST location.

## 5.4 Site 45A, USCG Seaplane Base

### 5.4.1 Site Description

Site 45 was included in the 1996 PA and described in that PA report as the remains of the seaplane base consisting of an approximately 150-foot-long, gravel-covered seaplane ramp, wood and metal debris, several dilapidated wood frame buildings, and metal huts (Ridolfi, 1996). Site 45A includes the onshore portion of the seaplane base, according to the 1999 C3 Plan. For purposes of this PA and because of the absence of structures or other potential sources of contamination, the USCG has defined Site 45A as the fueling valve box formerly associated with the 3-inch fuel pipeline that ran alongside the Seaplane Ramp Road (see Figure 5-2).

### 5.4.2 Investigation History

The valve box was investigated during the RI completed by COE contractors in 1998. According to the 1999 RI report, the valve box had been filled in with soil and was not sampled during the RI. An area was excavated around the valve box to a depth of approximately 2.5 feet to determine if there was associated piping. No piping was found either entering or exiting the valve box. A soil sample was collected from within the excavated area and analyzed for GRO, DRO, RRO, BTEX, PAHs, and lead. Analytical results included DRO at 17 mg/kg, GRO at 0.88 mg/kg, RRO at 96 mg/kg, lead at 17 mg/kg, and no detectable levels of PAHs (DOWL/Ogden Joint Venture, 1999). Figure 5-6 from the RI report shows the sampling location and analytical results for the valve box.

### 5.4.3 PA Activities and Results

During the PA site visit, Site 45A was observed and appeared as described in the 1999 RI report. There was no visual evidence of petroleum contamination in or surrounding the valve box. The area that had been excavated next to the valve box during the 1998 RI was re-excavated by shovel to a depth of approximately 18 inches, and a soil sample (45A99SL15) was collected from the bottom of the excavation (see Photographs 9 and 10). The sample was field-screened and submitted for laboratory analysis for GRO, DRO, RRO, and BTEX. Analytical results for the sample collected at Site 45A showed RRO at 23 mg/kg. No other contaminants were detected.

Following sampling, the valve box location was surveyed. The general area around the valve box location was visually inspected for indications of additional former structures or other potential sources of contamination that should be included in Site 45A. No other structures or potential contaminant sources were found.



**Photograph 9.** Valve box location (not visible; in trees at left of photograph).



**Photograph 10.** Valve box with sample 45A99SL15 location.

## 5.5 Site 46, USCG Fire Station/Post Exchange

### 5.5.1 Site Description

The remains of the fire station/post exchange consist of a 40-foot by 100-foot, single-story, cement-block building. The USCG constructed the building, which replaced an airplane engine nose hangar, after World War II. The building housed a fire station and the USCG Post Exchange. A pad directly behind the building was reported as possibly an electrical-equipment pad (Ridolfi, 1998). Figure 5-2 shows the location of Site 46.

### 5.5.2 Investigation History

The 1996 PA conducted at Site 46 reported that a large AST outside the building gravity-fed heating fuel to 12 residential buildings in the USCG housing area (Ridolfi, 1996). The AST was later assigned as part of Site 44; therefore, its location was not investigated during the PA for Site 46.

Site 46 was investigated during the 1997 LRI. During the LRI, roofing debris was observed littering the area immediately north of the building. A standpipe situated at the walkway entrance to the building indicated a possible UST location and was reported in the LRI. A magnetometer reading suggested that an UST approximately 9 feet long and 4 feet in diameter existed at the site. The galvanized standpipe appeared to go down 18 inches and then deadhead. One sample was taken from around the standpipe during the LRI. The sample indicated a lead concentration of 61 mg/kg (Ridolfi, 1998c).

Site 46 was included in the 1997 asbestos survey and lead-based paint investigation. During the asbestos survey, paper/foam wallboard with white fibrous, powdery coating was analyzed and determined to be ACM (Ridolfi, 1998b). Exterior and interior paint samples and soil samples at the building were collected and analyzed. The results indicated lead-based paint on both exterior and interior walls of the building (Ridolfi, 1998a). An asbestos abatement project that removed all ACM from the building and from debris piles on the north and west sides of the building was completed in 1998. The abatement project included a survey of an area approximately 25 feet from the building and cleanup of any ACM observed within the area (Ridolfi, 1999).

### 5.5.3 PA Activities and Results

During the PA site visit, the standpipe in the front of the building was inspected. Sample collection from the pipe was not possible because the pipe deadheaded at a pipe joint less than a foot from the top of the pipe. A small room in the northwest corner of the building, where a cement pad and electrical equipment debris indicated that a transformer might have been situated, was inspected. No signs of a past hazardous substance release were visible. A shallow subsurface soil sample (4699SL14) was collected approximately 7 feet off the doorway to the former potential electrical equipment room and downgradient of the building, field screened, and submitted for laboratory analysis for PCBs. No stained soil or other indications of surface contamination or other potential sources of contamination at the building were observed. Exterior and interior painted walls of the building had already been sampled during the 1997 investigation and were not sampled during this PA. Photographs 11 through 14 show the building and soil sample location.

Analytical results for the soil sample collected at this site reported no detectable levels of PCBs.

Following the sampling activities, the sampling location, building corners, and suspected UST standpipe location were surveyed.



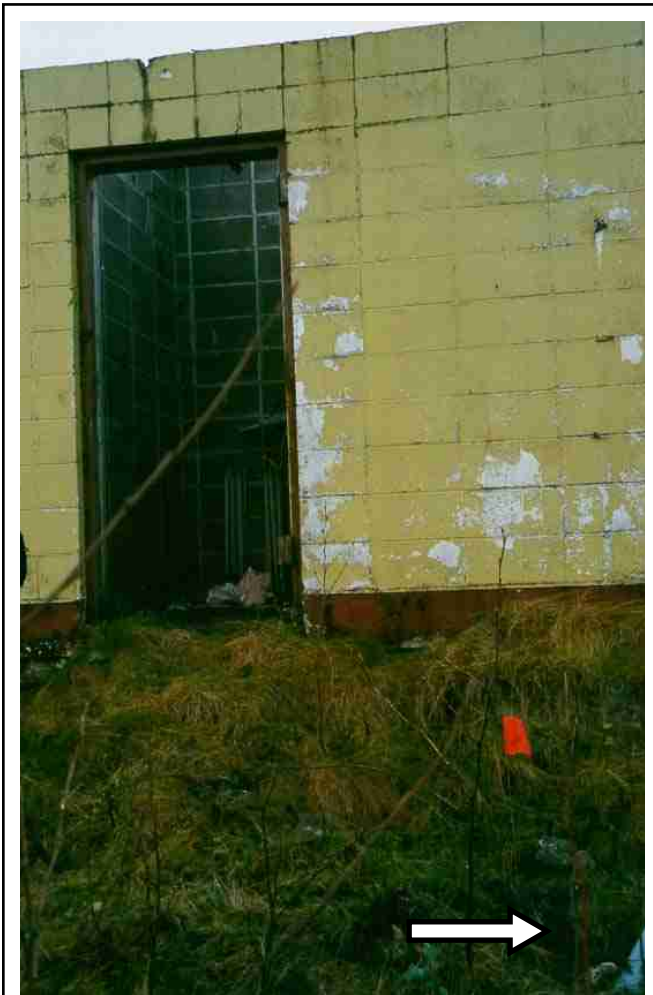
**Photograph 11.** Exterior of former Fire Station/Post Exchange. View looking northwest.



**Photograph 12.** Entrance to former Fire Station/Post Exchange. Standpipe visible in foreground.



**Photograph 13.** Northwest corner of former Fire Station/Post Exchange. Doorway to potential former electrical room.



**Photograph 14.** Sample 4699SL14 location (flagging) downgradient of former electrical room.

## 5.6 Site 47A, USCG Taxiways and Parking Circles

### 5.6.1 Site Description

The two USCG amphibious plane taxiways and associated parking circles are located off the Seaplane Ramp Road (also called Seaplane Base Road), directly across from Site 46 (former fire station/post exchange). The taxiways and parking circles have been converted into roadways. Site 47A includes the first (southeastern) parking circle (see Figure 5-2).

### 5.6.2 Investigation History

Site 47 was originally identified as the taxiway and 4 parking circles. The site was reported in the 1996 PA and the 1998 LRI reports. At that time the parking circles contained concrete slabs and electrical hookups for trailers, a metal hut, a metal storage shed, unidentified metal canisters with pressure-locking lids, 55-gallon barrels, and miscellaneous debris scattered on the parking circle pads or in adjacent ponds. An old, out-of-service Westinghouse transformer was found in a standing metal hut, resting directly on the concrete slab floor of the hut (Ridolfi, 1998a). The location of the transformer was documented at Site 47C in the 1998 LRI report (Ridolfi, 1998b).

During the LRI, two suspected AST locations were found on the southeast-most parking circle of Site 47A. Both suspected AST sites had cribbing that is typical of AST installations. This same parking circle had several (more than 10) 6-inch shell storage canisters and approximately 12 to 14 steel barrels (Ridolfi, 1998b).

The Site 47A location is also identified in the June 1999 C3 Plan as Site 47B for purposes of investigating abandoned shell storage (powder) canisters. Site 47B was included in the drum removal and RI completed by COE contractors in 1999.

### 5.6.3 PA Activities and Results

During the PA site visit, several site markers and flagging left from the COE drum removal and RI activities were observed throughout Site 47A. Drums and empty metal canisters were also observed in the area. One drum appeared to be partially full and was labeled with “USN” stamps, indicating property of the U.S. Navy (Photograph 16). An area of visibly stressed vegetation was also observed; this area also included several stakes with flagging from the drum removal and RI, drums, and empty metal canisters. Because it was believed that this site had been sampled during the RI, additional sampling was not completed at this site during the PA. Photographs 15 through 18 show site conditions observed at the time of the PA site visit. An attempt was made to locate the two suspected former AST locations described in the 1998 LRI report. Wooden debris that may be one of the potential AST locations was observed.

The locations of the site markers and flagging observed during the site visit were surveyed and the label information on the markers was recorded.

Following the PA, additional follow-up with the COE and COE contractors who completed the 1999 site work at Site 47B was conducted in order to obtain updated site information for Site 47A. At that time it was discovered that the site work completed by the COE contractors

in 1999 consisted only of removing 63 powder canisters. No drum removal or site sampling was completed during that work. The stakes that were observed during the PA indicate the locations where the canisters were removed, rather than sampling locations. Future sampling planned by the COE at those locations is anticipated to only include sampling for unexploded ordnance contamination.



**Photograph 15.** Drums and debris in tundra off former parking circle. View looking east.



**Photograph 16.** Partially full drum, with "USN" label, in tundra off parking circle.



**Photograph 17.** Drums, debris, powder canister removal location markers from 1999 removal and RI. View looking east.



**Photograph 18.** Drums, debris, powder canister removal location markers from 1999 removal and RI. View looking northeast.

## 5.7 Site 68, USCG Water Treatment Plant

### 5.7.1 Site Description

The remains of the sewage treatment plant at this site are northeast of the former USCG quarters (Site 69). Details about its past operation were not found in files reviewed for this PA; however, it is assumed it operated as a domestic sewage treatment plant for the building(s) in that area. A June 13, 1973, USCG Partial Plot Plan (Coast Guard Drawing No. 2190) identifies the structure as a sewage treatment plant. A transformer pad is also shown on the plot plan as being less than 10 feet off the southern side of the structure. Figure 5-3 shows the location of Site 68.

### 5.7.2 Investigation History

A PCB transformer located at this site was reported in the 1999 C3 Plan (FAA, 1999). The treatment plant building was included in the 1997 asbestos survey and investigation. At the time of that investigation, the roof of the treatment plant building had been removed and the walls were partially knocked down. The survey reported that the building was originally a 20-foot by 30-foot wood-frame building. It contains empty aluminum vats and a control panel. Samples of interior and exterior cementitious transit wallboard were analyzed and determined to be ACM (Ridolfi, 1998b).

### 5.7.3 PA Activities and Results

During the PA site visit, the former treatment plant was observed and inspected for evidence of environmental contamination such as stained soil or the presence of drums or a transformer. The structural design of the plant indicates it was a wastewater treatment plant. The heavy rains and saturated soil conditions hampered observation of possible stained soil in the area during the site visit. No obvious areas of stained soil were observed. No drums, transformers, or transformer pads were observed at the site. Remains of a possible transformer that were observed in front of the adjacent USCG quarters (Site 69) might have been the transformer mentioned in the C3 Plan; however, this was not confirmed during the site visit. The walls of the former treatment plant were completely dismantled and scattered around the site (see Photographs 19 and 20).

A paint chip sample (6899PT07) was collected from the remaining metal structure and analyzed for lead. Photograph 20 shows the sample location. The lead concentration in the paint chip sample was reported at 21,000 mg/kg.

After the sampling activities at this site, the sampling location and building corners of the remaining treatment plant structure were surveyed.



**Photograph 19.** Former sewage treatment plant. View looking north.



**Photograph 20.** Paint chip sample 6899PT07 on top of metal sewage plant structure.

## 5.8 Site 69A, USCG Quarters–POL

### 5.8.1 Site Description

The remains of the USCG quarters consist of a two-story, T-shaped building that is divided into what were individual living units and shared lavatories. The building has a boiler room containing an insulated boiler, water tank and piping, vinyl tile flooring, and cement exterior siding. A former AST that supplied fuel to the building was located at the northeast corner of the building, outside the former kitchen/dining room. Figure 5-3 shows the location of Site 69A.

Photographs 21 and 22 show the building as it appeared in 1977, when the USCG ceased using the building and moved its operations off the island. Use of the building by other entities after the USCG left the island is not well documented; however, a 1986 inventory report of the Annette Island Landing Field completed for the COE states that the building was in use by the Metlakatla Indian Community Council at the time the inventory site visit was conducted in September 1985 (Sverdrup, 1986).

### 5.8.2 Investigation History

The former quarters were investigated during the 1997 LRI. At that time, a small metal building containing what appeared to be a waste incinerator was reported near the quarters building. At that time, the building contained four partially filled, unlabeled 55-gallon barrels (Ridolfi, 1998c).

The LRI Report also documented that during the August 1997 Founders Day, a community member suggested that there was a former X-ray clinic at this facility and was concerned that there was radiological contamination. The facility was investigated for radiological effects with use of a Victoreen radiation detector. The entire facility was swept, including all wings and the upstairs and downstairs. No indications of radiological contamination were found (Ridolfi, 1998c).

During the LRI it was confirmed that the boiler for the building was fueled by an AST that was northeast of the kitchen/dining area. Two supply/return lines near the AST were of the same type and size as those connected to the boiler, and both had strong diesel residue on the inside pipe surfaces. Possible soil contamination in this area was not further investigated (Ridolfi, 1998c).

Work being done at the site at the time of the LRI had also uncovered the ground surface immediately surrounding the building perimeter, and the possible existence of a former UST was investigated. No evidence of a UST was found (Ridolfi, 1998c).

Site 69 was included in the asbestos survey investigation and lead-based paint investigation completed in 1997 and reported in 1998. Paint samples from interior walls and soil samples surrounding the building were analyzed and determined to contain elevated levels of lead. Suspected ACM was encountered during dismantling of the structure in 1997, and the building was flagged as an Asbestos Hazard Area. Results of the asbestos investigation



**Photograph 21.** Former USCG quarters in May 1977. View of front entrance looking north.



**Photograph 22.** Former USCG quarters in May 1977. Former AST shown at right, near northeast corner of former dining room area in building. View looking west.

documented ACM in damaged condition throughout the building. The building is still flagged for no admittance because of its status as an Asbestos Hazard Area.

### 5.8.3 PA Activities and Results

PA activities at this site included visual inspection of the area immediately surrounding the building and soil sampling at two areas for potential petroleum contamination. The interior of the building was not accessed because of the asbestos hazard. Photographs 23 through 28 show site conditions at the time of the site visit. A soil sample (69A99SL05) was collected approximately 4 feet from the northeast corner of the building in the vicinity of the former AST (Photograph 25). Another soil sample (69A99SL06) was collected approximately 6.5 feet from the former boiler room in the back of the building (Photograph 26). The samples were field screened and submitted for laboratory analysis for GRO, DRO, RRO, and BTEX. Observations of soil staining in the general area were hampered by the rain and saturated soil conditions during the site visit; however, no obvious areas of stained soil or stressed vegetation from contamination were observed at this site.

Results for soil sample 69A99SL05, collected at the former AST location, include 170 mg/kg of DRO and 13 mg/kg of RRO. No detectable levels of GRO and BTEX compounds were reported.

Results for soil sample 69A99SL06, collected behind the boiler room, include 7.3 mg/kg of DRO and 13 mg/kg of RRO. No detectable levels of GRO or BTEX compounds were reported.

A former PCB transformer with a “No PCBs” label affixed was observed near the southwest corner of the building (see Photograph 27). Unlabeled remains of another potential transformer were observed in front of the building (Photograph 28). The remains could be the same transformer reported at Site 68 during the 1997 LRI, but this was not confirmed during the site visit. A debris pile near the northeast corner of the building contained drums. One drum was labeled with a Metlakatla Power and Light label.

The two soil sample locations and building corners were surveyed after the sampling activities.

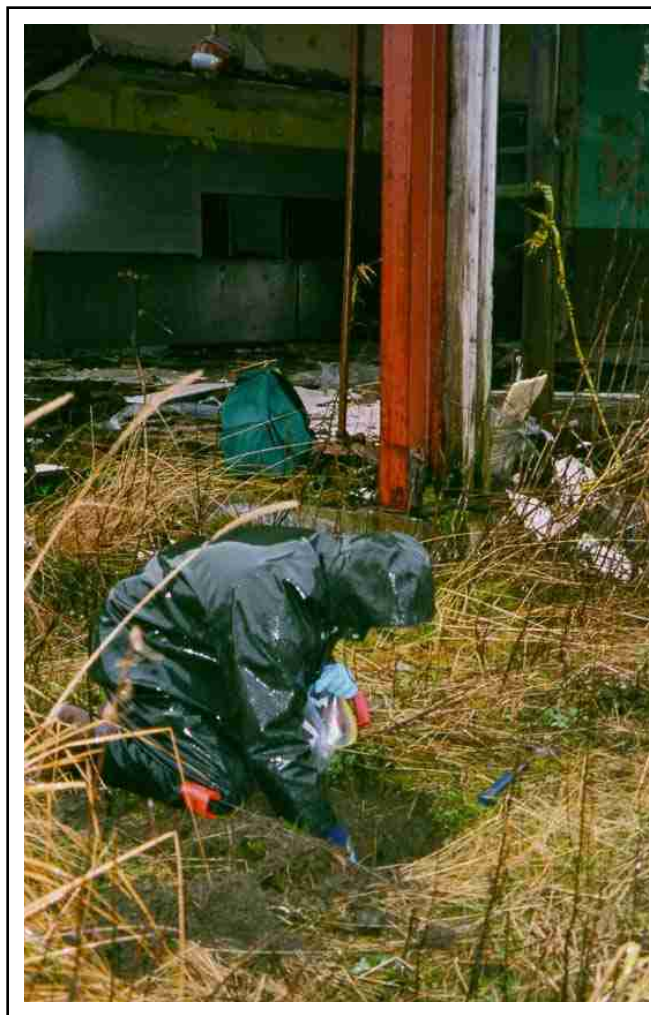


**Photograph 23.** Current condition of former USCG quarters. View looking north



**Photograph 24.** Current condition of former dining room area of USCG quarters. Part of debris pile visible at right. View looking west.

**Photograph 25.** Soil sample 69A99SL05 location, near northeast corner of building, in area of former AST.



155538 AI.RP PhotoPages.f08 01.03/00 anc/b

**Photograph 26.** Soil sample 69A99SL06 location, near boiler room at back of building. View looking east.



**Photograph 27.** Labeled non-PCB abandoned transformer south of USCG quarters.



155538.A1.RP PhotoPages.fh8 01/03/00 anc/jb

**Photograph 28.** Former USCG quarters with unlabeled abandoned transformer shown at right of building. View looking northwest.

## 5.9 Site 71A, USCG Garage–Asbestos

### 5.9.1 Site Description

This site was identified and described in the 1996 PA. The garage is a 40-foot by 100-foot metal building and was primarily used by the USCG as an office building (Ridolfi, 1996). Site 71A includes the USCG garage for purposes of evaluating ACM only. Fuel storage and potential fuel contamination at this location will be addressed by the BIA as Site 71B. Figure 5-3 shows the location of Site 71A.

### 5.9.2 Investigation History

At the time of the 1997 LRI, the MIC sawmill was currently using the building to store spare parts, barrels of lubricants, and other petroleum-related products. Minor maintenance on sawmill equipment and vehicles was also being performed. A small storage yard for miscellaneous equipment was reported to be northwest of the garage (Ridolfi, 1998c).

A 6,000-gallon AST was reported on the northeast side of the garage. This tank sits on wood blocks and was in use at the time of the LRI. The storage yard contained a 1,500-gallon AST on concrete. The caps of the AST were missing. An abandoned AST was found among the trees east of the equipment storage yard (Ridolfi, 1998c).

The LRI did not include sampling within the interior of the garage building. During the LRI, one soil sample was collected along the gravel path on the edge of the tarmac where surface drainage accumulates. Results indicated concentrations of 2,400 mg/kg of DRO, 6,300 mg/kg of RRO, and 178 mg/kg of lead (Ridolfi, 1998c).

Site 71 was included in the 1997 asbestos survey and investigation. Transit and gypsum wallboard and floor tiles from the interior of the building were sampled and documented to be ACM (Ridolfi, 1998b).

### 5.9.3 PA Activities and Results

During the PA site visit, the interior of the garage building was evaluated. The building is divided into two halves. Currently one half of the building is used for a welding shop, and the other end of the building contains equipment, oils, and fuel products for the sawmill. A caretaker for the building was painting a boat in the building at the time of the site visit.

Because the garage had been sampled for asbestos in 1997, no additional effort was made to identify potential ACM in the building during the PA site visit. A paint chip sample (71A99PT08) was collected from a second-floor interior wall and analyzed for lead. The location for this sample was not surveyed because it was inside the building. The sample ID number was written on the wall where the paint chips were collected, for future reference. Photographs 29 through 32 show the garage building as it appeared during the PA site visit. Photograph 33 shows the location where the paint chip sample was collected from the second-floor hallway of the building.

Analytical results from the paint chip sample reported a lead concentration of 490 mg/kg.

The hangar vehicle fuel pad to the north of the garage building and several locations on the tarmac were surveyed for potential future use in establishing surface drainage patterns in the area.



**Photograph 29.** Exterior of former USCG garage. View looking southwest.



**Photograph 30.** Exterior of former USCG garage. View looking east.



**Photograph 31.** Interior of former USCG garage.



155538.A1.RP PhotoPages.fh8 01/03/00 anc/jb

**Photograph 32.** Interior of former USCG garage.

**Photograph 33.** Paint chip sample 71A99PT08 location on second floor interior wall of former USCG garage.



1555388.A1.jpg PhotoPages.fh8 01/03/00 anc/jb

## 5.10 Site 72, Hangar Boiler Building

### 5.10.1 Site Description

The boiler building is approximately 30 feet by 25 feet by 18 feet and contains two boilers and associated piping. Figure 5-3 shows the location of Site 72.

### 5.10.2 Investigation History

Site 72 was previously investigated and reported in the 1998 LRI report and the *Annette Island Brownfields Site Assessment Report* (E&E, 1999). Removal of a regulated PCB-contaminated transformer completed in December 1997 is reported in the *Final Report, Task Order #18, PCB Transformer Removal, Former USCG Airstation Annette Island* (Carson Dorn, 1999). Information from the reports is summarized below.

In December 1997, an inactive pad-mounted electrical transformer containing PCB-contaminated transformer oil was removed at this site. The transformer was on a concrete pad approximately 20 feet northwest of the boiler building. The transformer and concrete pad were removed and shipped offsite for disposal. Eleven soil samples were collected following the removal activities; PCBs (Aroclor 1260) were detected in four of the samples. The highest PCB concentration was 0.7 mg/kg in a soil sample collected 6 feet north of the transformer location at 1.5-foot depth. PCBs (Aroclor 1260) were also detected (0.032 mg/kg) in a soil sample collected between the boiler building and the hangar across the street, northeast of the boiler building, indicating possible PCB contamination in site soils from a source other than the boiler building transformer. Additional investigation to determine the source(s) of PCB contamination in the area and delineate the horizontal and vertical extent of contamination was recommended (Carson Dorn, 1999). The LRI report includes a discussion of the three duplicate soil samples collected during the 1997 PCB removal project. All duplicate soil samples were below cleanup levels for PCBs (Ridolfi, 1998c).

During the Brownfields site assessment, five collocated surface and subsurface soil samples were collected around the boiler building and analyzed for volatile organic compounds (VOCs), semi-volatile organic compounds (SVOCs), pesticides, PCBs, GRO/BTEX, DRO, RRO, and metals. Significant results from the surface soil sampling included benzo(a)pyrene, an SVOC associated with petroleum compounds, at an estimated 94.5 micrograms per kilogram ( $\mu\text{g}/\text{kg}$ ); PCBs (Aroclor 1260) to 12,000  $\mu\text{g}/\text{kg}$ ; DRO up to 21,000 mg/kg; and arsenic, chromium, mercury, and nickel at concentrations at least three times background levels. The respective subsurface soil sample results for the sampling locations included PCBs (Aroclor 1260) at 200  $\mu\text{g}/\text{kg}$ ; DRO up to 15,000 mg/kg; and arsenic, chromium, and nickel at levels at least three times background levels. The report noted that some of the PCB levels exceeded EPA cleanup goals and some of the DRO levels exceeded ADEC cleanup levels (E&E, 1999).

Figure 2-10 from the Brownfields report shows the sampling locations used during investigations at the boiler building before the Brownfields assessment, and Figure 3-4 from the same report shows the sampling locations used during the Brownfields assessment.

Table 3-11 from the Brownfields report includes analytical results from the site assessment. These figures and table are included in Appendix C.

Site 72 was included in the 1997 asbestos survey and investigation. ACM was documented in the boiler insulation, boiler door gaskets, pipe insulation, and pipe fitting insulation (Ridolfi, 1998b). All ACM was removed from the building in 1998. Because the site was treated as a historical site during the asbestos removal, only the ACM was removed. The piping was left in place. Lockdown was applied after removal was complete (Ridolfi, 1999).

The boiler building was also included in the 1997 lead-based paint investigation. Paint chips and soil samples were collected for lead analysis. Results of the analyses indicated that a door and interior walls contained lead-based paint. Removal of lead-based paint surfaces was recommended following asbestos abatement (Ridolfi, 1998a). The paint removal work has not been conducted to date.

### **5.10.3 PA Activities and Results**

Previous investigations at the boiler building have documented petroleum hydrocarbons and PCBs above cleanup action levels at Site 72, and no additional soil samples were collected at this site during the PA site visit. A lead-based paint investigation has determined that paint containing lead exists in the building; therefore, no additional paint samples were collected. The asbestos removal project reportedly removed all ACM from the building. During the site visit, the area surrounding the boiler building was inspected for stained soil or other visual evidence of potential petroleum contamination. Heavy rain and saturated soil conditions hampered observation of stained soil at the time of the site visit. No additional areas of potential petroleum contamination were documented during the site visit. Building corners and the location of the former transformer were surveyed. Photographs 34 and 35 show the boiler building and surrounding area at the time of the site visit.



**Photograph 34.** Exterior of hangar boiler building. Boiler building AST (Site 73) shown in heavy brush vegetation at left of photograph. View looking west.



**Photograph 35.** Interior of hangar boiler building.

## 5.11 Site 73, Boiler Building AST

### 5.11.1 Site Description

This 4,000-gallon AST is situated south of the hangar boiler building. The tank supplied fuel to the boilers in the adjacent building. It rests on concrete saddles, inside a 6- to 8-inch earthen berm that is overgrown with vegetation. Figure 5-3 shows the location of Site 73.

### 5.11.2 Investigation History

The boiler building AST was investigated during the 1989 Phase II field investigation, 1997 LRI, and 1998 Brownfields site assessment. During the LRI, it was labeled as a fuel oil tank and reported as empty. One soil sample was collected at the east end of the tank during the LRI. The soil was reported as visibly stained, with a slight odor. Results indicated a DRO concentration of 1,200 mg/kg and a lead concentration of 574 mg/kg (Ridolfi, 1998c). COE contractors had sampled the same location during the 1989 Phase II Field Investigation. Results of the 1989 sample indicated 265 parts per million (ppm) of lead in the soil sample and 141 ppm total petroleum hydrocarbons (TPH). BTEX concentrations were less than 1 ppm in the soil sample. Figures 2-10 and 3-4 from the Brownfields report (Appendix C) show the sampling locations from these previous investigations. Table 3-11 from the Brownfields report includes analytical results from the assessment (Appendix C).

The AST was also included in the 1997 lead-based paint investigation. One paint chip and two soil samples were collected at this location for lead analysis. Results indicated the green paint surface on the tank contains lead (Ridolfi, 1998a).

### 5.11.3 PA Activities and Results

Previous investigations conducted at this site have concluded that petroleum and lead contamination exists at the AST location and that paint on the AST contains lead. Therefore, no additional samples or survey coordinates were collected during the PA. The open valve observed on the AST confirmed that the tank is empty. No obvious areas of soil staining from petroleum contamination were observed during the site visit; however, observations of soil condition were hampered by heavy rain and saturated soil conditions during the site visit. Photograph 34 from the previous Site 72 discussion shows the tank next to the boiler building. Heavy, brushy vegetation surrounding the tank prevented close-up photography of the tank exterior.

## 5.12 Site 74, USCG ASTs

### 5.12.1 Site Description

The two 10,000-gallon ASTs at this site stored fuel and were used for USCG flight operations. Figure 5-3 shows the location of Site 74.

### 5.1.2 Investigation History

This site was investigated during the 1989 Phase II field investigation and the 1997 LRI. At the time of the LRI, the two 10,000-gallon ASTs (28 feet long and 8 feet in diameter) with fuel-loading swing nozzles were positioned on elevated metal tank stands. Soil staining was observed under the ASTs (Ridolfi, 1998c).

Three soil samples (including one duplicate sample) were collected at this site during the LRI. One sample was taken under the dispenser of the northern AST, and two samples were collected under a dripping pipe that smelled of gasoline at the southern AST. The maximum concentration of GRO was 1,100 mg/kg; the maximum DRO concentration was 48,000 mg/kg; the maximum RRO concentration was 34 mg/kg; and the maximum lead concentration was 1,900 mg/kg (Ridolfi, 1998c). The same location had been sampled during the 1989 field investigation. Results of the soil sample collected at that time included 4,080 ppm lead, 17.2 ppm of TPH, and low levels (less than 1 ppm) of BTEX. The sample locations used in the previous investigations are shown in Figure 2-10 from the Brownfields site assessment report (Appendix C).

The ASTs at this site were also included in the 1997 lead-based paint investigation. Two paint chip and two soil samples were collected and analyzed for lead. Results indicated lead in the silver surface paint on the tanks (Ridolfi, 1998a).

### 5.12.3 PA Activities and Results

During the PA site visit, the ASTs and area immediately surrounding the ASTs were visually inspected. A measuring gauge on the northern tank read “0” inches in fuel depth. The two tanks appeared and sounded empty; however, there was no access to the valves on top of the tanks and the interiors of the tanks could not be observed. Three shallow subsurface soil samples, plus one duplicate QA/QC sample, were collected at this site, field screened, and submitted for laboratory analysis of GRO, DRO, RRO, BTEX, and lead. Paint samples from the tanks were not collected because the painted surface of the tanks had been previously investigated. The soil samples were from the following locations:

- Approximately 5 feet directly in front of the southern tank (7499SL09 and 7499SL10 [duplicate])
- In front of the northern tank, underneath a closed spigot. Petroleum odors were noted in the soil at this location (7499SL11).
- Underneath the structure supporting the two tanks, in the center of the tanks (7499SL12)

Photographs 36 through 38 show the ASTs at the time of the PA and the sampling locations.

The following analytical results were reported for the soil samples collected at Site 74:

7400SL09: 37 mg/kg of DRO  
130 mg/kg of RRO  
No detected GRO, BTEX compounds  
13 mg/kg of total lead

7499SL10: 34 mg/kg of DRO  
100 mg/kg of RRO  
No detected GRO, BTEX compounds  
19 mg/kg of total lead

7499SL11: 1,000 mg/kg of GRO  
13,000 mg/kg of DRO  
1.0 mg/kg of ethylbenzene  
15 mg/kg of total xylenes  
No detected RRO  
380 mg/kg of total lead

7499SL12: 200 mg/kg of DRO  
570 mg/kg of RRO  
No detected GRO, BTEX compounds  
24 mg/kg of total lead

Sample locations at Site 74 were surveyed following the sampling.



**Photograph 36.** USCG ASTs. Soil sample 7499SL09/7499SL10 and 7499SL11 locations. View looking southwest.



**Photograph 37.** USCG ASTs. Flagging at right is location of soil sample 7499SL09/7499SL10. Location of soil sample 7499SL12 is under left side of AST structure, as shown. View looking north.

**Photograph 38.** Location of soil sample 7499SL11 under valve on northern AST.



155538.A1.RP\_PhotoPages.fl8 01/03/00 anc/jb

## 5.13 Site 75, Hangar

### 5.13.1 Site Description

The hangar is a 160-foot by 200-foot by 30-foot steel frame structure that consists mainly of an open bay on the north side. The northern and southern 20 feet of the building have first- and second-floor rooms configured as offices, which in the past have been used by the FAA, USCG, U.S. Postal Service, and Weather Bureau. The building has insulated steam heat pipes, cement interior walls, cement exterior siding, and vinyl tile flooring in the office areas (Ridolfi, 1998c). Until recently, a sawmill operation was conducted within the hangar. The sawmill equipment is still in the building; however, the sawmill is not operating. Figure 5-3 shows the location of Site 75. Photographs 39 and 40 from May 1977 show the interior of the hangar building as it appeared when the USCG left the island.

### 5.13.2 Investigation History

Site 75 has been investigated several times and is reported in several documents, most recently in the LRI report (Ridolfi, 1998c) and the Brownfields site assessment report (E&E, 1999). The Brownfields report contains a concise history of past investigations at the hangar. The following information about the investigation history at Site 75 has been summarized from that report. Figure 2-10 from the Brownfields report (Appendix C) shows sampling locations discussed in the previous sampling investigations.

#### 1989 COE Site Investigation

In October 1989, contractors for the COE performed an inventory of materials and debris remaining at the landing field associated with the hangar facility. The purpose of the investigation was to identify hazardous wastes and petroleum hydrocarbon contamination sources that may require remedial action. Samples were collected from suspected release locations in the general vicinity of the hangar building, inactive transformers stored in the hangar, miscellaneous 55-gallon drums in the area, and building materials suspected to contain asbestos. The project report concluded that the hangar building did not contain significant quantities of hazardous waste (E&E, 1990).

#### 1990 FAA Underground Storage Tank (UST) Study

The FAA conducted an investigation at the Annette Island FAA Station in 1990 to identify the location and size of suspected USTs. None were discovered at the hangar facility (E&E, 1999).

#### 1991 FAA Environmental Compliance Investigation

In 1991, the FAA conducted an Environmental Compliance Investigation (ECI) at the Annette Island FAA Station, including the hangar building. ECI activities included literature searches, real estate record searches, a site reconnaissance, a site inventory of toxic and hazardous materials, site sampling, sample analysis, and production of a report. On the basis of the ECI, removal of inactive PCB- and non-PCB-containing electrical equipment at the hangar building, including 7 PCB and 30 non-PCB transformers, was recommended (E&E, 1992).



**Photograph 39.** Interior of hangar building in May 1977.



155538.A1.RP PhotoPages.tif8 01/03/00 arc/jb

**Photograph 40.** Interior of hangar building in May 1977.

### 1992 FAA Removal Project

The FAA removed hazardous and nonhazardous wastes and materials from locations throughout the Annette Island FAA Station during this project. A preliminary site visit to identify wastes was conducted in September and a removal action was completed in October 1992. PCB wipe samples were collected from floor stain locations at former electrical transformer oil spills in the hangar building, with results up to 79,000 µg per 100 square centimeters (E&E, 1993).

### 1994 FAA Expanded Site Investigation/Interim Cleanup

The FAA conducted an Expanded Site Investigation/Interim Cleanup in June 1994 at the Annette Island FAA Station. Sampling activities included additional wipe samples for PCBs inside the hangar building and sampling of additional previously uninventoried electrical equipment. Remediation of the PCB floor contamination in the hangar was attempted. The cleanup of the floor contamination did not successfully remove the PCB contamination, and further action was recommended (E&E, 1995a).

### 1994 FAA Decontamination Action

In September 1994, the FAA conducted additional cleanup activities in the hangar building to try to remediate the PCB floor contamination by using *CAPSUR*, a petroleum-based cleanser. Follow-up wipe sampling concluded the cleaning had not sufficiently removed the PCBs from the cement floor (E&E, 1999).

### 1995 FAA Contamination Investigation and Removal Action

In 1995, FAA completed a RI to delineate the extent of PCB contamination and to evaluate effective options for remediation in and around the hangar building. Removal of PCB-contaminated concrete and soil was completed, and surplus hazardous and nonhazardous materials from the hangar building and surrounding area were removed (E&E, 1995a).

### 1996 Preliminary Assessment

The hangar building was identified as a potential source of contamination in the Metlakatla Peninsula PA conducted in 1996. The hangar building was described in the PA as a 160- by 300- by 30-foot steel frame structure with metal roof and siding. The building was an open bay entered through large sliding doors on the north side. The east and west sides of the interior of the building had first- and second-floor rooms configured as offices. At the time of the PA, 13 electrical transformers labeled with non-PCB labels were stored directly on the concrete floor in a first-floor room on the south side of the building. The main bay housed an MIC sawmill operation. The sawmill operation had a 6,000-gallon fuel AST on the ground surface at the northwest corner of the building and a diesel-fueled sawdust-burning stack at the southwest corner of the building (Ridolfi, 1996). During a continuation of the PA and as part of an environmental assessment completed for several areas around the Annette Island facilities, a surface soil sample was collected between the hangar and the former USCG garage (Site 71). The sample was analyzed for GRO, DRO, RRO, BTEX, and lead. Detected contaminants included DRO at 2,400 mg/kg, RRO at 6,300 mg/kg, and lead at 178 mg/kg (E&E, 1999).

In addition to the above investigations that are summarized in the Brownfields report, the following studies and cleanups, including the Brownfields site assessment, have been completed at Site 75 since the 1996 PA:

### **1996 and 1997 Remedial Action**

The *Final Remedial Action Report* (OHM, 1998) describes the results of remedial actions accomplished at several Annette Island locations, including the hangar building and adjacent property. The remedial actions were conducted by contractors for the FAA from September 25 to December 6, 1996, and April 23 to May 30, 1997. The work was performed in three rooms in the northeast corner portion of the hangar. The hangar was in use as a sawmill at the time. Figure 1-3 from that report shows the layout of the rooms and additional information regarding the areas sampled and discussed in the report (Figure 5-8). The three rooms, designated as rooms A, B, and C, contained ACM used for piping insulation, and PCB-contaminated concrete flooring, wall sheeting, debris, conduit and piping. PCB-contaminated ACM, debris, conduit, piping, and electrical components were removed and shipped offsite for disposal (OHM, 1998). Approximately 109 cubic yards of PCB-contaminated soil was excavated from a grass lot between the hangar and the former USCG garage and from an area underneath a portion of the removed concrete in Room C. Geotextile fabric and plastic liner were placed over one localized excavated area at the grass lot where the cleanup action level had not been achieved (26 mg/kg total PCBs remaining in soil) at 2 feet below the ground surface. All areas were backfilled with clean borrow following the cleanup activities.

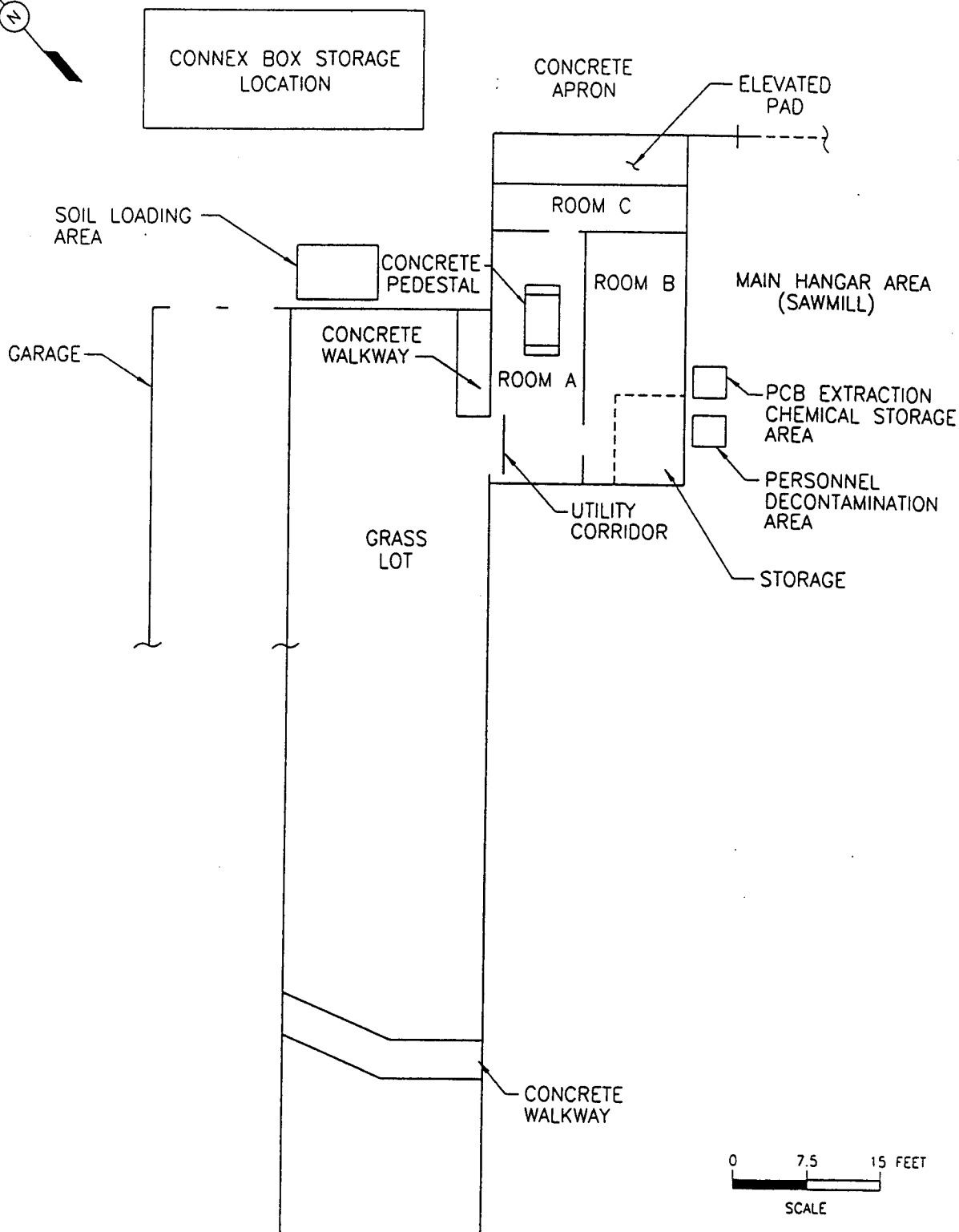
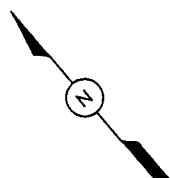
The southern portion of the grass lot, between the hangar and garage and south of the concrete walkway, was not remediated because of limitation of the contractor's scope of work. Eight soil samples collected from this area were found to have PCB concentrations ranging from 0.76 mg/kg to 59 mg/kg.

After contaminated concrete and debris were removed, scarification of concrete and scaling and stripping of painted surfaces in the three rooms reduced all surface PCB concentrations to less than the cleanup action level of 10 µg/100 cubic centimeters, except for one beam that contained 11 µg/100 cubic centimeters. Restoration of the site included backfilling of excavated sites and restoration of the concrete surfaces in Rooms A and B and placement of new concrete flooring in Room C (OHM, 1998).

### **1997 Metlakatla Peninsula Lead-Based Paint Investigation**

During the 1997 lead-based paint investigation completed at several Annette Island facilities, paint chip and soil samples were collected from the hangar building and analyzed for lead. Results indicated that white exterior paint, green hangar door paint, yellow upstairs interior wall paint, and gray interior wall paint contained lead. At the time of this investigation, the bay portion of the hangar building housed a sawmill and wood-sorting tables. The sawmill was being operated by MIC members and, as Metlakatla Forest Products, was producing thick-dimension lumber (Ridolfi, 1998a).

Aug 24, 1998 - 15:29:14 C:\19087\19087056.dwg




 <b>OHM Remediation Services Corp.</b> PLEASANTON, CA				DRAWN BY <b>A.SUAREZ</b>		DATE <b>7/6/98</b>		<b>SITE PLAN</b>  <b>ANNETTE ISLAND PCB REMOVAL,</b> <b>METLAKATLA, ALASKA</b>	
				CHECKED BY <b>E. POPEK</b>		DATE <b>7/6/98</b>			
				APPROVED BY <b>D.GEMAR</b>		DATE <b>7/6/98</b>			
				PROJECT MANAGER <b>D.GEMAR</b>		DATE <b>7/6/98</b>			
CONTRACT NAME <b>DACA85-94-D-0017 DO#0009</b>				SCALE <b>AS NOTED</b>		OHM PROJECT No. <b>19087</b>		FIGURE No. <b>FIG 1-3</b>	
AUTOCAD FILE No. <b>19087056</b>		PLOT SCALE <b>1=1</b>		SHEET OF <b>1 1</b>		DOCUMENT CONTROL No.		REVISION	

Figure 5-8

### **1997 Metlakatla Peninsula Asbestos Inventory and Abatement Plan**

The hangar building was included in the asbestos survey investigation completed in 1997 and reported on in 1998. Thirty-four samples of 19 suspected ACMs were collected and analyzed. The results indicated ACM throughout the building (Ridolfi, 1998b).

### **1997 Limited Remedial Investigation**

An LRI at several areas around Annette Island, including Site 75, was completed in 1997 and reported on in 1998. During the 1997 LRI, 13 out-of-service transformers were observed to be stored in a first-floor room on the south side of the building and one on the grass outside of the northwest corner of the hangar. The transformers were positioned directly on the concrete slab floor, and each had a “non-PCB” label prominently displayed. The bay portion of the hangar housed a saw and wood-sorting tables. At the time of the LRI, the sawmill was operated by MIC members and produced thick-dimension lumber. The mill operation had a 6,000-gallon AST positioned on the ground surface at the northwest corner of the hangar and a diesel-fueled sawdust-burning stack at the southwest corner of the hangar.

During the LRI, one soil sample was collected at this site to evaluate the potential for surface runoff and migration of contaminants from the site. The sample location was a storm drain sump near the hangar where surface runoff collected. Results indicate concentrations of 550 mg/kg of DRO, 1,100 mg/kg of RRO, and 289 mg/kg of lead (Ridolfi, 1998c).

During the LRI, the fill and vent ports of a UST were uncovered west of the hangar and north of the concrete slab areas. The tank appeared to be mostly empty, with some oily water remaining (Ridolfi, 1998c). Two additional UST locations that were reported by FAA personnel were described in the LRI report, but their locations were not confirmed during the LRI.

### **1997 Brownfields Site Assessment**

The EPA Superfund Technical Assessment and Response Team conducted the field sampling portion of a Brownfields Site Assessment at several locations around Annette Island in 1997 and completed the reporting in 1999. Site 75 was included in the assessment. Table 3-11 and Figure 3-4 from the report (Appendix C) show the sample results, comparison values, and sampling locations. Three sets of collocated surface and subsurface soil samples were collected from the hangar building area and analyzed for PCBs, pesticides, and metals. PCBs (Aroclor 1260) were detected in a surface soil sample collected between the hangar building and the former USCG garage (Site 71) at 2,000 µg/kg, which exceeded EPA cleanup goals. Two pesticide compounds (P,P'-DDD and P,P'-DDT) were detected in a surface soil sample collected near the MIC office trailer located at the southwest corner of the building at 3,300 and 5,200 µg/kg, respectively, which exceeded EPA cleanup goals. Chromium and nickel were detected in surface and subsurface samples at levels at least 3 times background levels and exceeded ADEC cleanup action levels. Pesticides and PCBs were not detected at concentrations above comparison standards in subsurface soils at the hangar building.

A sediment sample that was collected from the manhole near the west corner of the hangar building adjacent to the warehouse was analyzed for pesticides, PCBs, and metals. Analytical results were compared to Washington State sediment quality values, background

values, and ecological screening benchmarks. Detected analytes that exceeded the Washington values included PCBs. In addition, several metals were detected at concentrations at least 3 times background values and that exceeded ecological screening benchmarks. The zinc concentration also exceeded the Washington State sediment quality values.

In addition to soil and sediment sampling, a groundwater excavation pit was dug to 8.5 feet below ground surface between the hangar building and the former USCG garage (Site 71). An unfiltered groundwater and a filtered groundwater sample were collected and analyzed for VOCs, SVOCs, pesticides, PCBs, and metals. PCBs were detected in the unfiltered groundwater at 4.1 micrograms per liter ( $\mu\text{g/L}$ ), which exceeded three comparison standards. DRO was detected at a concentration of 110 mg/L in the unfiltered groundwater standard, which exceeded the ADEC cleanup levels. In the unfiltered groundwater sample, the lead concentration (172  $\mu\text{g/L}$ ) exceeded all four comparison standards used for the assessment, manganese (5,400  $\mu\text{g/L}$ ) exceeded two of the standards, and chromium (186  $\mu\text{g/L}$ ) and nickel (1,480  $\mu\text{g/L}$ ) concentrations exceeded three of the standards. The report noted that no contaminants were detected in the filtered groundwater sample at concentrations exceeding the comparison standards (E&E, 1999).

The Brownfields site assessment report concluded that DRO and metals surface soil concentrations at levels above the comparison standards were widespread throughout the hangar building area. The contaminants have migrated to subsurface soils at most of the locations sampled and also into groundwater collected between the hangar and former USCG garage (Site 71) at concentrations above federal and state comparison standards used for the assessment. The report recommended actions including restricting access to contaminated areas, conducting additional investigations to determine the depths of soil contamination, removing and disposing of contaminated soil, and providing worker safety training regarding contamination exposure and protection (E&E, 1999).

### 5.13.3 PA Activities and Results

The previous investigations conducted at Site 75 have documented that petroleum hydrocarbons remain in surface and subsurface soils and in groundwater at the hangar building area. PCBs also remain in site soils above cleanup goals used in previous studies and cleanups. Additional sampling outside of the hangar building was not conducted during the PA site visit. Three project and one duplicate QA/QC paint chip samples were collected from interior painted walls inside the hangar building at the following three locations:

- A vertical steel support beam on the northern wall in the main hangar bay area (7599PT01)
- Interior wall in a room on first floor on the northern side of the hangar (7599PT02)
- Interior wall in a room on first floor on the southern side of the hangar (7599PT03 and 7599PT04 [QA/QC duplicate]). This room also contained several old, labeled non-PCB transformers that have been described in previous investigations at this site. Photograph 46 shows some of the transformers as they appeared during the PA site visit.

Photographs 41 through 46 show the hangar area and the PA sampling locations at the time of the site visit. All paint chip samples were analyzed for lead; two of the three project samples (7599PT01 and 7599PT03) and the duplicate sample (7599PT04) were also analyzed for PCBs.

Analytical results for sample 7599PT01, collected from the vertical support beam on the northern side of the hangar, reported lead concentration of 37,000 mg/kg and PCBs (Aroclor 1254) at 0.7 mg/kg.

Analytical results for sample 7599PT02, collected from the interior wall in a room located on the northern side of the hangar, reported lead concentration of 6,200 mg/kg. PCBs were not requested or analyzed for this sample.

Analytical results for sample 7599PT03, collected from an interior wall in the room located on the southern side of the hangar, showed a lead concentration of 25,000 mg/kg and PCBs (Aroclor 1254) of 0.850 mg/kg. The duplicate sample 7599PT04 collected at this location had a lead concentration of 49,000 mg/kg and PCBs (Aroclor 1254) of 1.0 mg/kg.

The three sampling locations were not surveyed, because they were inside a building. The sample ID numbers were written on the walls at the location from which the paint chip samples were collected. Numerous outside location points immediately north and west of the hangar were surveyed to try to establish a surface drainage gradient. These points continue west behind the hangar boiler building (Site 72) and toward the manmade lagoon behind that site.



**Photograph 41.** Exterior of hangar building. Sawmill equipment and lumber visible at entrance and inside building. View looking west.



155538.A1.RP PhotoPages.fh8 01/03/00 anc/jb

**Photograph 42.** Exterior and interior of eastern side of hangar, with sawmill equipment visible.



**Photograph 43.** Interior northern wall of hangar. Location of paint chip sample 7599PT01 shown on vertical metal support.



**Photograph 44.** Paint chip sample 7599PT02 location inside room on northern side of hangar.

**Photograph 45.** Location of paint chip sample 7599PT03/7599PT04 on vertical metal support inside room on southern side of hangar.



155538.A1.RP PhotoPages.fl8 01/03/00 anc/jb

**Photograph 46.** Abandoned non-PCB labeled transformers inside room on southern side of hangar (same room from which paint chip samples 7599PT03/7599PT04 were collected).



## SECTION 6

# Conclusions

---

The primary goal of the PA completed at the 13 sites for which the USCG is the lead agency was to identify areas of actual or potential contamination from past practices and site use. The PA incorporated historical information obtained from file records and personnel interviews with new information obtained during the site visit, including analytical data from samples collected at the sites. The limited sampling at the sites was performed to help determine if contamination existed in selected areas and was not intended to define the nature and extent of potential contamination. Reported levels of contaminants were compared to cleanup levels for residential soil published in *Metlakatla Indian Community Guidelines for Cleanup and Remediation of Open Dumps and Other Contaminated Sites* (Annette Islands Reserve, undated).

In addition to information about potential contamination at the sites, GPS coordinates for sampling locations and other pertinent features at each site were obtained during this PA. Photographs were also taken to document the current site conditions observed during the PA. This information is available for future use by the USCG and other agencies conducting work at Annette Island sites.

On the basis of historical data regarding past site use and investigations, and observations and analytical data obtained during this PA, the following conclusions are presented for each USCG site.

### **Site 33B, Former USCG Storage Area**

- The PA followed a removal action and RI conducted by COE contractors earlier in 1999. According to planning documents completed for the removal action and RI, a collection of drums at revetment H-40 was to be removed and environmental samples collected at this site. Stakes and flagging observed throughout revetments H-38 and H-40 during the PA site visit at Site 33B indicate that soil, sediment, surface water, and groundwater samples were collected during the RI.
- Visible evidence of asphalt remains along the southern edge of the H-40 gravel pad, and sheens in surface water next to the asphalt remains were observed during the PA site visit.
- MIC cleanup levels do not include values for sediment. A comparison of the sediment concentrations detected in the one sediment sample collected during the PA near the asphalt remnants at H-40 to MIC soil cleanup levels indicates that DRO and RRO concentrations exceed MIC cleanup levels. The sample was collected less than 10 feet from an asphalt-contaminated section of the H-40 gravel pad. Because of the muskeg environment from which the sample was collected and the high moisture content in the sample (90.5 percent), biogenic activity likely contributed to the reported DRO and RRO results and biased the results high.

- Revetments H-38 and H-40 appear to be used as disposal sites for abandoned vehicles, household appliances, batteries, and other wastes. The recently constructed targets and the recently spent shell casings observed at H-40 indicate the revetment has been used as a firing range. These activities may have contributed to contamination at this site.
- Preliminary results from the 1999 COE RI indicate that approximately 149 drums were removed from this site; the majority of the drums contained asphalt thought to be left over from past runway construction. Preliminary analytical results from the RI indicate petroleum hydrocarbons and metals exist at the site at concentrations exceeding screening levels used during the RI. A final report containing complete information about the removal and RI will be submitted to the COE in mid-2000.

#### **Site 40, Pipeline Oil/Water Separator**

- A sediment sample from the separator had previously been collected and analyzed during a RI completed for the COE in 1998. Results from that sample were compared to ADEC Method 2 cleanup levels and MIC cleanup levels. The RI report concluded that reported contaminants were below the ADEC Method 2 cleanup levels. The report also concluded that although DRO and RRO concentrations in the sediment sample exceeded MIC cleanup levels, the high moisture content of the sample indicated that biogenic activity likely biased the results high. The total lead concentration reported for the sample also exceeded MIC cleanup levels. The report concluded that determination of leachable lead in the sample may result in alternative acceptable total lead levels.
- Record reviews and site observations completed during this PA did not document additional potential sources of contamination at the separator pit or the immediately surrounding area.
- The open-topped separator pit will continue to accumulate water and sediment to some extent. Site observations during the PA indicate that the pit is likely not watertight; the level of water in the pit was relatively low and no records indicate the pit has been emptied in the past. Removal and proper disposal of separator pit contents (including accumulated water and sediment) will be necessary before demolition of the structure.

#### **Site 44, USCG Housing**

- The UST and AST locations associated with this site were investigated and cleaned up in 1998.
- No additional sources of potential contamination were documented in site records or from observations completed during the site visit.
- The 1997 asbestos survey concluded that floor tiles and wallboard debris scattered around the site are ACM. Although a removal of ACM was completed at several Annette Island sites in 1999, the information reviewed for this PA did not document that all debris in the Site 44 area was removed. According to USCG records, the housing units at this site were removed intact when they were transported to Sitka; therefore, it is unlikely that ACM debris associated with building interiors, such as floor tiles or wallboard, observed at this site in 1997 originated from the housing units.
- Specific solid waste disposal requirements apply to any remaining ACM at this site.

- No soil contamination that requires additional investigation or corrective action was documented at this site as a result of the PA.

#### **Site 45A, USCG Seaplane Base**

- A soil sample was previously collected next to the valve box during an RI completed for the COE in 1998. Analytical results from that sample were compared to ADEC Method 2 cleanup levels and MIC cleanup levels. The RI report concluded that reported contaminants were below all applicable cleanup levels.
- A soil sample collected in the same location during the PA detected only a very low RRO concentration of 23 mg/kg, which is well below current applicable MIC cleanup levels.
- No additional sources of potential contamination were documented in site records or from observations completed at this site during the PA.
- No soil contamination that requires additional investigation or corrective action was documented as a result of this PA.

#### **Site 46, USCG Fire Station/Post Exchange**

- An asbestos abatement project completed at this site in 1998 removed all ACM from within the building and in an area of approximately 25 feet surrounding the building.
- Exterior and interior paint on the building contains lead-based paint, according to results of the lead-based paint investigation completed at the building in 1997.
- The potential UST location described in previous investigations at this site was not confirmed during the PA, although a standpipe is still visible.
- A soil sample collected downgradient from a former electrical room at the northwest corner of the building was analyzed for PCBs. No detectable levels of PCBs were reported in the sample.
- Record reviews and site observations completed during this PA did not document additional potential sources of contamination at the building or the immediately surrounding area.
- Specific removal and disposal requirements apply to lead-based paint that is removed from the building.

#### **Site 47A, USCG Taxiways and Parking Circles**

- This site was investigated during the removal action and RI completed for the COE in 1999. At the time of the PA site visit, stakes and flagging observed throughout Site 47A were believed to indicate locations where sediment and surface water samples were collected during the RI; therefore, additional sediment and water samples were not collected. Information obtained from COE contractors following the PA site visit confirmed that the stakes and flagging marked locations where 63 abandoned powder canisters had been removed and no site sampling had been conducted.

- Abandoned drums and other metal debris observed at this site during the PA site visit require removal and proper disposal.
- Visible evidence of contamination, including stained soil and stressed vegetation, was observed in areas where the majority of the RI stakes were also observed.
- Complete information about the removal action completed by COE contractors in 1999 will be submitted in a report to the COE in mid-2000.

#### **Site 68, USCG Water Treatment Plant**

- The information obtained during the PA did not confirm the presence of a transformer at this location or evidence of contamination from a transformer or other contaminant sources.
- Visual observation of the area immediately adjacent to and surrounding the treatment plant was not possible because of the remains of the former building roof and walls.
- An asbestos survey conducted at this site in 1997 documented that the interior and exterior wallboard of the former building was ACM.
- Heavy rains at the time of the PA site visit hampered observation of possible stained soil in the area; however, no obvious areas of stained soil were observed.
- A paint chip sample collected from the remaining treatment plant structure indicates the structure is covered with lead-based paint.
- Special removal and disposal requirements apply to paint that is removed from the former separator structure.

#### **Site 69A, USCG Quarters-POL**

- Historical photographs document the exterior condition of the building at the time the USCG left the island in 1977. A 1986 COE report documented that the building was used by MIC after the USCG left. Use of the building after the USCG left the area may have contributed to any existing contamination at this site.
- Two areas of potential petroleum contamination were evaluated during the PA:
  - Previous investigations at this site documented that the boiler was fueled by the AST.
  - DRO and RRO detected in soil samples collected at the northeast corner of the former dining room (former AST location) and on the west side of the building (outside former boiler room) were below MIC cleanup levels.
- Previous investigations have documented the presence of ACM and lead-based paint within the building, and the building is currently designated as an Asbestos Hazard Area.
- No additional sources of potential contamination were documented in site records or from observations completed at this site during the site visit.

**Site 71A, USCG Garage-Asbestos**

- An asbestos survey conducted at this site in 1997 documented ACM in interior wallboard and floor tiles.
- Analytical results from a paint chip sample collected from the second floor hallway wall indicate lead-based paint.
- Special removal and disposal requirements apply to the ACM and lead-based paint within this building.

**Site 72, Hangar Boiler Building**

- An asbestos abatement project removed all ACM from this building in 1999.
- A PCB-contaminated transformer and cement pad were removed from this site in 1997. Follow-up soil sampling indicated that PCB contamination exists in site soils and that the source of the contamination may be from source(s) other than the removed transformer.
- Results of soil sampling during the 1997 Brownfields site assessment indicate that soil contaminated with elevated levels of petroleum hydrocarbons, metals, and PCBs above applicable cleanup levels exist at this site.

**Site 73, Boiler Building AST**

- Previous sampling at this site indicated that the soil is contaminated with petroleum hydrocarbons and lead in excess of applicable cleanup levels.
- The surface coating on the tank is lead-based paint, according to results of the 1997 lead-based paint investigation.
- Special removal and disposal requirements apply to the paint removed from the AST.

**Site 74, USCG ASTs**

- Previous sampling at this site indicated the soil is contaminated with petroleum hydrocarbons and lead in excess of applicable cleanup levels.
- The surface coating on the tanks is lead-based paint, according to results of the 1997 lead-based paint investigation.
- Soil sampling conducted during the PA indicates that GRO, DRO, RRO, xylenes, and lead above MIC cleanup levels exist in site soils.

**Site 75, Hangar**

- Historical photographs document conditions of the building when the USCG left the island in 1997. The PA site visit recorded current conditions of the building after years of use by other entities, including MIC. A sawmill is currently situated within the hangar building.
- PCBs and ACM were removed from the hangar building during past cleanups. ACM remains within the building.

- Exterior and interior lead-based paint exists at the hangar, according to the 1997 lead-based paint investigation. Paint chips sampled during the PA confirmed the existence of lead-based paint at three locations within the hangar.
- Analysis of paint chip samples collected during the PA reported detectable levels of PCBs.
- Previous investigations at this site have documented PCBs, petroleum hydrocarbons, and metals in soil and petroleum hydrocarbons in groundwater at the hangar site at levels above applicable cleanup levels.

## SECTION 7

# Works Cited

---

Annette Island Working Group and USCG. *Coordinated Comprehensive Cleanup Plan, Annette Island, Alaska*. June 1999.

Annette Islands Reserve. *Metlakatla Indian Community Guidelines for Cleanup and Remediation of Open Dumps and Other Contaminated Sites*. Undated.

Carson Dorn. *United States Coast Guard Final Report, Task Order #18, PCB Transformer Removal; Former USCG Airstation Annette Island*. January 12, 1999.

CH2M HILL. *Annette Island Preliminary Assessment Work Plan*. Prepared for the U.S. Coast Guard. November 1999.

DOWL/Ogden Joint Venture. *Remedial Investigation Report, Annette Island Remedial Investigation, Annette Island, Alaska*. Prepared for U.S. Department of the Army, Corps of Engineers, Pacific Ocean Division. August 1999.

Ecology and Environment (E&E), Inc. *Annette Island Brownfields Site Assessment Report*. June 1999.

E&E, Inc. *Environmental Compliance Investigation Report, Annette Island FAA Station, Annette Island, Alaska*. May 1992.

E&E, Inc. *Field Investigation Report, Phase II Field Investigation, Former DOD Sites, Annette Island FAA Station, Annette Island, Alaska*. November 1989.

E&E, Inc. *Hazardous and Toxic Waste Report, Phase II Field Investigation, Annette Island Landing Field, Annette Island, Alaska*. March 1990.

E&E, Inc. *Site Cleanup and Investigation Report, Volume 1, Expanded Site Investigation/Interim Cleanup, Annette Island FAA Station, Annette Island, Alaska*. May 1995a.

E&E, Inc. *Trip Report, FAA Hazardous Waste Removal/Disposal Project, Annette Island FAA Station, Annette Island, Alaska*. February 1993.

E&E, Inc. *Trip Report, FAA Nonhazardous and Hazardous Materials Removal/Disposal Project, Annette Island FAA Station, Annette Island, Alaska*. June 1995b.

Federal Aviation Administration. *Annette Island Environmental Restoration Issues*. In conjunction with BIA, COE, USCG. August 1997.

HLA/Wilder JV. *Site Assessment Report, U.S. Coast Guard Former Facilities*. Prepared for Department of Transportation, U.S. Coast Guard, Civil Engineering Unit. July 30, 1999.

Hogan, Eppie V. *Overview of Environmental and Hydrogeologic Conditions at Nine Coastal and Island Sites in South-Central and Southeast Alaska, USGS Open-File Report 95-404*. 1995.

Jacobs Engineering Group Inc. *Removal Action and Remedial Investigation, Annette Island, Alaska, Final Work Plan*. June 1999.

OHM Remediation Services Corporation. *Final Remedial Action Report, Annette Island PCB Removal, Metlakatla, Alaska*. September 1998.

Ridolfi Engineers and Associates, Inc. *Metlakatla Peninsula Asbestos Abatement Phase I Closure Plan (Draft)*. July 30, 1999

Ridolfi Engineers and Associates, Inc. *Metlakatla Peninsula Asbestos Inventory and Abatement Plan*. June 30, 1998b.

Ridolfi Engineers and Associates, Inc. *Metlakatla Peninsula Lead-Based Paint Investigation*. June 30, 1998a.

Ridolfi Engineers and Associates, Inc. *Metlakatla Peninsula Limited Remedial Investigation*. Prepared for the Metlakatla Indian Community. December 1998c.

Ridolfi Engineers and Associates, Inc. *Preliminary Assessment, Metlakatla Peninsula*. October 10, 1996.

Sverdrup & Parcel and Associates, Inc. *Defense Environmental Restoration Account Inventory Report for Annette Island Landing Field, Alaska*. January 1986.

## **Appendix A**

### **Laboratory Analytical Data**

---



an Analytica Group company

CH2M Hill of Alaska  
301 W. Northern Lights Blvd.  
Suite 601  
Anchorage, AK 99503-2792  
Attn: Colleen Burgh

RECEIVED BY  
CH2M HILL AK

JAN 10 2000

325 Interlocken Parkway  
Suite 200  
Broomfield, CO 80021  
(303) 469-8868  
(800) 873-8707  
FAX: (303) 469-5254

Order #: 99-12-189  
Date: 12/30/99 14:35  
Work ID: USCG PA  
Date Received: 12/21/99  
Date Completed: 12/29/99

#### SAMPLE IDENTIFICATION

<u>Sample Number</u>	<u>Client Description</u>
01	7499SL09
02	7499SL10

<u>Sample Number</u>	<u>Client Description</u>
03	7499SL11
04	7499SL12

Enclosed are the analytical results for the submitted sample(s). Please review the CASE NARRATIVE for a discussion of any data and/or quality control issues. A listing of data qualifiers and analytical codes is located on the TEST METHODOLOGIES page at the end of the report.

If you have any questions regarding the analyses, please feel free to call.

Sincerely,

Roger S. Bain  
Project Manager

Samples were prepared and analyzed according to methods outlined in the following references:

- o Methods for the Determination of Metals in Environmental Samples, EPA/600/R-94/111, May 1994.
- o Standard Method for Laboratory Determination of Water (Moisture) Content of Soil, Rock, and Soil-Aggregate Mixtures, ASTM D 2216-80, July 1980.

All analyses meet quality assurance objectives.

Sample: 01A 7499SL09

Collected: 12/01/99 Matrix: SOIL

<u>Test Description</u>	<u>Method</u>	<u>Result</u> <u>Q</u>	<u>Limit</u>	<u>Units</u>	<u>Analyzed</u>
ICP Metals, Total	SW 6010B				
Lead		13	6.0	mg/Kg-DRY	12/28/99
Percent Moisture	ASTM D2216	16.8	0.1	WT%	12/22/99

Sample: 02A 7499SL10

Collected: 12/01/99 Matrix: SOIL

<u>Test Description</u>	<u>Method</u>	<u>Result</u> <u>Q</u>	<u>Limit</u>	<u>Units</u>	<u>Analyzed</u>
ICP Metals, Total	SW 6010B				
Lead		19	5.6	mg/Kg-DRY	12/28/99
Percent Moisture	ASTM D2216	11.2	0.1	WT%	12/22/99

Sample: 03A 7499SL11

Collected: 12/01/99 Matrix: SOIL

<u>Test Description</u>	<u>Method</u>	<u>Result</u> <u>Q</u>	<u>Limit</u>	<u>Units</u>	<u>Analyzed</u>
ICP Metals, Total	SW 6010B				
Lead		380	5.8	mg/Kg-DRY	12/28/99
Percent Moisture	ASTM D2216	13.1	0.1	WT%	12/22/99

Sample: 04A 7499SL12

Collected: 12/01/99 Matrix: SOIL

<u>Test Description</u>	<u>Method</u>	<u>Result</u> <u>Q</u>	<u>Limit</u>	<u>Units</u>	<u>Analyzed</u>
ICP Metals, Total	SW 6010B				
Lead		24	5.9	mg/Kg-DRY	12/28/99
Percent Moisture	ASTM D2216	15.4	0.1	WT%	12/22/99

THE FOLLOWING CODES APPLY TO THE ANALYTICAL REPORT

RESULT field...

ND = not detected at the reported limit

NA = analyte not applicable (see case narrative/methods for discussion)

Q (qualifier) field...

GENERAL:

\* = Recovery or %RPD outside method specifications

H = value is estimated due to analysis run outside EPA holding times

E = reported concentration is above the instrument calibration range

D = analyte was diluted to bring within instrument calibration range or  
to remove matrix interferences

ORGANIC ANALYSIS DATA QUALIFIERS:

B = analyte was detected in the laboratory method blank

J = analyte was detected above the instrument detection limit (IDL)  
but below the analytical reporting limit (CRDL)

INORGANIC ANALYSIS DATA QUALIFIERS:

B = analyte was detected above the instrument detection limit (IDL)  
but below the analytical reporting limit (CRDL)

W = post digestion spike did not meet criteria (85-115%)

S = reported value determined by the Method of Standard Additions

Order # 99-12-189  
ANALYTICA, INC.

CH2M Hill of Alaska  
TEST METHODOLOGIES

Page 5

3050_I:	Acid Digestion of Sediments, Sludges, and Soils for ICP Metals	METHOD: 3050A
ICP_TS:	METALS, Total (ICP)	METHOD: 6010B
PMOIST:	PERCENT MOISTURE	METHOD: ASTM D2216

Sample: 01A 7499SL09

Matrix: SOIL

<u>Analysis</u>	<u>Method</u>	<u>Collected</u>	<u>Received</u>	<u>TCLP date</u>	<u>Extracted</u>	<u>Analyzed</u>
ICP Metals, Total	SW 6010B	12/01/99	12/21/99	NA	12/27/99	12/28/99
Percent Moisture	ASTM D2216	12/01/99	12/21/99	NA		12/22/99

Sample: 02A 7499SL10

Matrix: SOIL

<u>Analysis</u>	<u>Method</u>	<u>Collected</u>	<u>Received</u>	<u>TCLP date</u>	<u>Extracted</u>	<u>Analyzed</u>
ICP Metals, Total	SW 6010B	12/01/99	12/21/99	NA	12/27/99	12/28/99
Percent Moisture	ASTM D2216	12/01/99	12/21/99	NA		12/22/99

Sample: 03A 7499SL11

Matrix: SOIL

<u>Analysis</u>	<u>Method</u>	<u>Collected</u>	<u>Received</u>	<u>TCLP date</u>	<u>Extracted</u>	<u>Analyzed</u>
ICP Metals, Total	SW 6010B	12/01/99	12/21/99	NA	12/27/99	12/28/99
Percent Moisture	ASTM D2216	12/01/99	12/21/99	NA		12/22/99

Sample: 04A 7499SL12

Matrix: SOIL

<u>Analysis</u>	<u>Method</u>	<u>Collected</u>	<u>Received</u>	<u>TCLP date</u>	<u>Extracted</u>	<u>Analyzed</u>
ICP Metals, Total	SW 6010B	12/01/99	12/21/99	NA	12/27/99	12/28/99
Percent Moisture	ASTM D2216	12/01/99	12/21/99	NA		12/22/99

QA/QC REPORT  
METHOD BLANK SUMMARY  
12/30/99

CLIENT: CH2M\_HILL\_AK

PAGE: 1  
ORDER#: 9912189

SAMPLE ID	ANALYTE	UNITS	ANAL DATE	RESULT	LIMIT	SPIKE	%REC FLAG	QC SPECS	
								LOW	UPPER
MB-9901430	ICP Metals, Total	mg/Kg	12/28/99						
	Lead			ND	5.0				

METHOD BLANK SPIKE SUMMARY

SAMPLE ID	ANALYTE	UNITS	ANAL DATE	RESULT	LIMIT	SPIKE	REF VAL	%REC FLAG	QC SPECS	
									LOW	UPPER
MBS-9901430	ICP Metals, Total	mg/Kg	12/28/99							
	Lead			50	5.0	50	ND	100	80	120

MATRIX SPIKE SUMMARY

SAMPLE ID	ANALYTE	UNITS	ANAL DATE	RESULT	LIMIT	SPIKE	REF VAL	%REC FLAG	QC SPECS	
									LOW	UPPER
S912189-01A	ICP Metals, Total	mg/Kg-DRY	12/28/99							
	Lead			64	6.0	60	13	85.0	70	130

SAMPLE DUPLICATE SUMMARY

SAMPLE ID	ANALYTE	UNITS	ANAL DATE	RESULT	LIMIT	REF VAL	%RPD FLAG	QC SPECS	
								UPPER	
D912189-01A	ICP Metals, Total	mg/Kg-DRY	12/28/99						
	Lead			21	6.0	13	NC	35	



**ANALYTICA**  
ALASKA INC.

011 W. 4th Ave.  
Anchorage, AK 99501  
(907) 258-2155  
FAX: (907) 258-6634

3438 Snaune Drive  
Juneau, AK 99801  
(907) 780-6668  
FAX: (907) 780-6670

325 Interlocken, Pkwy. Ste. 200  
Broomfield, Colorado 80021  
(303) 469-8868  
FAX: (303) 469-5254

1/12/87  
LGN: A912008  
Quote: A912007

www.analyticagroup.com

# Chain of Custody Record / Analysis Request

Company Name <b>CR21N WELL</b>		Project Name <b>USCL PA</b>		
Company Address <b>301 WILK 4601 99503</b>		Report To: <b>COLLEGE BUDGET</b>		
Telephone <b>278-2551</b>		Invoice To:		
FAX <b>277-4736</b>		P.O. Number:		
Sample ID	Date Collected	Time Collected	Matrix	# Containers
7599PT01	12.1	1015 PM	1	
7599PT02		1020	1	
7599PT03		1025	1	
7599PT04		1026	1	
6999SL05		1050	2	
6899PT07		1110	1	
6999SL06		1055	2	
7199PT08		1150	1	
7499SL09		1215	2	
7499SL10		1226	2	
7499SL11		1230	2	
7499SL12		1235	2	
COMMENTS <b>FL 101 Z client has requested lead to be ran on these samples and these samples are DATA RECALL</b>				
RELINQUISHED BY SAMPLER: <b>[Signature]</b>		RECEIVED BY: <b>[Signature]</b>		
RELINQUISHED BY: <b>[Signature]</b>		RECEIVED BY: <b>[Signature]</b>		
DELIVERABLES <input type="checkbox"/> Level 1 <input checked="" type="checkbox"/> ADEC <input type="checkbox"/> ACOE <input type="checkbox"/> Chromatograms		EDD <input checked="" type="checkbox"/> COELT <input type="checkbox"/> STD		
Cooler Receipt Information Temp Received: <b>3.1</b> °C Temp Received: <b>3.1</b> °C # of Coolers: <b>one</b> Seals: <b>hand delivered</b> Courier Fee: \$ Airbill #		TURNAROUND <input type="checkbox"/> 2 Business Days <input checked="" type="checkbox"/> 5 Business Days <input type="checkbox"/> 10-15 Business Days #Business Days: <b>12/17</b>		

## COOLER RECEIPT FORM

CLIENT CH2M HILL-AK CSN# A91207 PROJECT USCG PA ORD# 9912189

USE OTHER SIDE OF THIS FORM TO NOTE DETAILS CONCERNING CHECK-IN PROBLEMS/DISCREPANCIES

A. PRELIMINARY EXAMINATION PHASE: Date cooler opened: 12-21-99 Chain of Custody #         
by print JOINEC sign [Signature]

1. Did cooler come with a shipping slip air bill, etc.? YES NO

If YES, enter carrier name & air bill number here: Fedex 817051421085

2. Were custody seals on outside of cooler? YES NO

How many & where:        seal date:        seal name:       

3. Were custody seals unbroken and intact on the date and time of arrival? YES NO

4. Did you screen samples for radioactivity using the Geiger Counter? YES NO

5. Were custody papers sealed in a plastic bag & taped inside to the lid? YES NO

6. Were custody papers filled out properly ink, signed, etc.? YES NO

7. Did you sign custody papers in the appropriate place? YES NO

8. Was project identifiable from custody paper?, If yes, enter project name at the top of this form YES NO

9. If required, was enough ice used? YES NO Type of ice: BLUE Temp 4 °C

10. Have designate person initial here to acknowledge receipt of cooler: [Signature] date: 12-21-99

B. LOG-IN PHASE: Date samples were logged-in: 12-21-99

by print JOINEC sign [Signature]

11. Describe type of packing in cooler: Bubble Wrap

12. Were all bottles sealed in separate plastic bags? YES NO

13. Did all bottles arrive unbroken & were labels in good condition? YES NO

14. Were all bottle labels complete ID, date, time, signature, preservative, etc.? YES NO

15. Did all bottle labels agree with custody papers? YES NO

16. Number of samples received 4 Number of bottles received 4

17. Were correct containers used for the tests indicated? YES NO

18. Were correct preservatives added to samples? YES NO

19. Was a sufficient amount of sample sent for tests indicated? YES NO

20. Were bubbles absent in volatile samples? If NO, list by Sample #/ID YES NO

21. Was the project manager called and status discussed? If yes, give details on the back of this form YES NO

22. Who was called?        By whom?        date



811 W. 8th Avenue, Anchorage, AK 99501 • (907) 258-2155 • FAX (907) 258-6634

CH2M HILL of ALASKA  
301 W. NORTHERN LIGHTS, #601  
ANCHORAGE, AK 99503

Attn: Ms. Colleen Burgh

Order #: A9-12-008  
Date Reported: 12/17/99 13:52  
Project Name: USCG PA - Annette Island  
Date Received: 12/03/99

RECEIVED BY  
CH2M HILL AK  
DEC 21 1999

Includes (3) hardcopy reports.  
COELT emailed to: cburgh@ch2m.com.

#### SAMPLE IDENTIFICATION

<u>Sample Number</u>	<u>Client Description</u>
01	69A99SL05
02	69A99SL06
03	7499SL09
04	7499SL10

<u>Sample Number</u>	<u>Client Description</u>
05	7499SL11
06	7499SL12
07	33B99SD13
08	45A99SL15

Enclosed are the analytical results for the submitted samples. All analyses met quality assurance objectives, except where noted in the case narratives. If you have any questions regarding the analyses, please feel free to call.

Sheldon Stone  
Technical Manager



Analytica Alaska, Inc.

tabular sample report - fuels

811 W. 8th Ave. Anchorage, AK 99501 Phone-(907)258-2155 FAX-(907)258-6634

AAI Project ID: A912008

Client: CH2M HILL of ALASKA

17-Dec-99

Project Name: USCG PA

Sample ID	Client Sample ID	Matrix	Benzene	Toluene	Ethylbenzene	Xylenes, Total	GRO	Units	DRO	RRO	Units
A912008-01	69A99SL05	SOIL	U (0.021)	U (0.021)	U (0.021)	U (0.021)	U (2.1)	mg/Kg	170 (4.4)	41 (8.7)	mg/Kg
A912008-02	69A99SL06	SOIL	U (0.020)	U (0.020)	U (0.020)	U (0.020)	U (2.0)	mg/Kg	7.3 (4.2)	13 (8.4)	mg/Kg
A912008-03	7499SL09	SOIL	U (0.030)	U (0.030)	U (0.030)	U (0.030)	U (3.0)	mg/Kg	37 (4.8)	130 (9.6)	mg/Kg
A912008-04	7499SL10	SOIL	U (0.021)	U (0.021)	U (0.021)	U (0.021)	U (2.1)	mg/Kg	34 (4.4)	100 (8.9)	mg/Kg
A912008-05	7499SL11	SOIL	U (0.27)	U (0.27)	1.0 (0.27)	15 (0.27)	1000 (27)	mg/Kg	13000 (250)	U (500)	mg/Kg
A912008-06	7499SL12	SOIL	U (0.034)	U (0.034)	U (0.034)	U (0.034)	U (3.4)	mg/Kg	200 (4.7)	570 (9.3)	mg/Kg
A912008-07	33B99SD13	SOIL	U (0.23)	U (0.23)	U (0.23)	U (0.23)	U (23)	mg/Kg	1100 (43)	4000 (86)	mg/Kg
A912008-08	45A99SL15	SOIL	U (0.021)	U (0.021)	U (0.021)	U (0.021)	U (2.1)	mg/Kg	U (4.5)	23 (9.0)	mg/Kg

The number in parentheses is the reporting limit. "U" Indicates analyte was not detected. "()" Indicates analyte was not analyzed for. "J" indicates value is estimated.

The Science of Analysis, The Art of Service

ADEC Laboratory Approval Number: UST-014  
LGN NUMBER: A912008

The samples were received properly packed in one cooler at 3.1°C and were refrigerated upon receipt.

#### QUALITY CONTROL

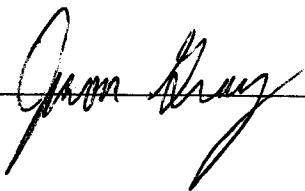
Except as noted below, all quality control objectives were met for this project.

The high DRO result for sample A912008-05 was due to the presence of diesel. The high DRO and RRO result for sample A912008-07 was probably due to the presence of biogenic materials.

#### Data Flag Definitions:

- U - Indicates this analyte was analyzed for and not detected at the reporting limits listed.
- D - Indicates the surrogate was diluted out of the sample due to high levels of organics native to the samples.
- M - Indicates matrix effects are responsible for surrogate recoveries which are out of limits.
- NC - Indicates analyte was detected in original analysis but not confirmed in secondary analysis.
- DR - Indicates result is from secondary analysis at dilution.
- S - Indicates corrective action did not accomplish desired results or corrective action not performed for cause. See QC Evaluation Summary for details.
- B - Indicates analyte was found in Method Blank. Result should be considered as potentially biased high. See QC Evaluation Summary for details.
- < - Indicates sample not preserved according to AK101 requirements. True value is greater than or equal to the reported value.
- W - Sample reported on a wet weight basis due to missing percent moisture aliquot.
- J - Sample result is estimated. See QC Evaluation Summary for details.

Analyst: \_\_\_\_\_



Date: \_\_\_\_\_

12, 17, 99

Order # A9-12-008  
Analytica Ak.

CH2M HILL of ALASKA  
CASE NARRATIVE

Page 3

Analyst:



for S.G.

Date:

12/17/99

Client ID: 69A99SL05  
Test Description: BTEX/GRO in soil-101/8021B  
Collected: 12/01/99 10:50

Lab ID: 01A  
Method: AK101/8021B  
Matrix: SOIL

ANALYSIS DATE: 12/07/99

ANALYST: SG

INSTRUMENT ID: NAT

Results reported on a dry weight basis.

FILE ID: N9120712.D

UNITS: mg/Kg

DILUTION: 1

Percent Moisture: 6.6

<u>PARAMETER</u>	<u>CAS # or ID</u>	<u>RESULT</u>	<u>LIMIT</u>	<u>Q</u>
Benzene	71-43-2	U	0.021	
Toluene	108-88-3	U	0.021	
Ethylbenzene	100-41-4	U	0.021	
Xylenes, Total	1330-20-7	U	0.021	
Gasoline Range Organics	VPH	U	2.1	

<u>SURROGATE</u>	<u>%RECOVERY</u>	<u>LIMITS</u>
1,4-Difluorobenzene (PID)	99 %	60 - 120
p-Bromofluorobenzene (PID)	100 %	60 - 120
1,4-Difluorobenzene (FID)	105 %	60 - 120
p-Bromofluorobenzene (FID)	89 %	60 - 120

Client ID: 69A99SL05  
Test Description: DRO/RRO in soil-AK102&103  
Collected: 12/01/99 10:50

Lab ID: 01B  
Method: 3550/AK102/3  
Matrix: SOIL

EXTRACTION DATE: 12/07/99

ANALYSIS DATE: 12/07/99

ANALYST: JKG

INSTRUMENT ID: WOOF

Sample reported on a dry weight basis.

FILE ID: W9120732.D

UNITS: mg/Kg

DILUTION: 1

% MOISTURE: 6.6

<u>PARAMETER</u>	<u>CAS # or ID</u>	<u>RESULT</u>	<u>LIMIT</u>	<u>Q</u>
Diesel Range Organics	DRO	170	4.4	
Residual Range Organics	RRO	41	8.7	

<u>SURROGATE</u>	<u>%RECOVERY</u>	<u>LIMITS</u>
o-Terphenyl	64 %	60 - 120
Squalane	63 %	60 - 120

Client ID: 69A99SL06  
Test Description: BTEX/GRO in soil-101/8021B  
Collected: 12/01/99 10:55

Lab ID: 02A  
Method: AK101/8021B  
Matrix: SOIL

ANALYSIS DATE: 12/07/99

ANALYST: SG

INSTRUMENT ID: NAT

Results reported on a dry weight basis.

FILE ID: N9120705.D

UNITS: mg/Kg

DILUTION: 1

Percent Moisture: 7.8

<u>PARAMETER</u>	<u>CAS # or ID</u>	<u>RESULT</u>	<u>LIMIT</u>	<u>Q</u>
Benzene	71-43-2	U	0.020	
Toluene	108-88-3	U	0.020	
Ethylbenzene	100-41-4	U	0.020	
Xylenes, Total	1330-20-7	U	0.020	
Gasoline Range Organics	VPH	U	2.0	

<u>SURROGATE</u>	<u>%RECOVERY</u>	<u>LIMITS</u>
1,4-Difluorobenzene (PID)	100 %	60 - 120
p-Bromofluorobenzene (PID)	101 %	60 - 120
1,4-Difluorobenzene (FID)	106 %	60 - 120
p-Bromofluorobenzene (FID)	89 %	60 - 120

Client ID: 69A99SL06  
Test Description: DRO/RRO in soil-AK102&103  
Collected: 12/01/99 10:55

Lab ID: 02B  
Method: 3550/AK102/3  
Matrix: SOIL

EXTRACTION DATE: 12/07/99

ANALYSIS DATE: 12/07/99

ANALYST: JKG

INSTRUMENT ID: WOOF

Sample reported on a dry weight basis.

FILE ID: W9120733.D

UNITS: mg/Kg

DILUTION: 1

% MOISTURE: 7.8

<u>PARAMETER</u>	<u>CAS # or ID</u>	<u>RESULT</u>	<u>LIMIT</u>	<u>Q</u>
Diesel Range Organics	DRO	7.3	4.2	
Residual Range Organics	RRO	13	8.4	

<u>SURROGATE</u>	<u>%RECOVERY</u>	<u>LIMITS</u>
o-Terphenyl	65 %	60 - 120
Squalane	66 %	60 - 120

Client ID: 7499SL09  
Test Description: BTEX/GRO in soil-101/8021B  
Collected: 12/01/99 12:25

Lab ID: 03A  
Method: AK101/8021B  
Matrix: SOIL

ANALYSIS DATE: 12/07/99

ANALYST: SG

INSTRUMENT ID: NAT

Results reported on a dry weight basis.

FILE ID: N9120706.D

UNITS: mg/Kg

DILUTION: 1

Percent Moisture: 16.5

<u>PARAMETER</u>	<u>CAS # or ID</u>	<u>RESULT</u>	<u>LIMIT</u>	<u>Q</u>
Benzene	71-43-2	U	0.030	
Toluene	108-88-3	U	0.030	
Ethylbenzene	100-41-4	U	0.030	
Xylenes, Total	1330-20-7	U	0.030	
Gasoline Range Organics	VPH	U	3.0	

<u>SURROGATE</u>	<u>%RECOVERY</u>	<u>LIMITS</u>
1,4-Difluorobenzene (PID)	99 %	60 - 120
p-Bromofluorobenzene (PID)	100 %	60 - 120
1,4-Difluorobenzene (FID)	106 %	60 - 120
p-Bromofluorobenzene (FID)	90 %	60 - 120

Client ID: 7499SL09  
Test Description: DRO/RRO in soil-AK102&103  
Collected: 12/01/99 12:25

Lab ID: 03B  
Method: 3550/AK102/3  
Matrix: SOIL

EXTRACTION DATE: 12/07/99

ANALYSIS DATE: 12/07/99

ANALYST: JKG

INSTRUMENT ID: WOOF

Sample reported on a dry weight basis.

FILE ID: W9120734.D

UNITS: mg/Kg

DILUTION: 1

% MOISTURE: 16.5

<u>PARAMETER</u>	<u>CAS # or ID</u>	<u>RESULT</u>	<u>LIMIT</u>	<u>Q</u>
Diesel Range Organics	DRO	37	4.8	
Residual Range Organics	RRO	130	9.6	

<u>SURROGATE</u>	<u>%RECOVERY</u>	<u>LIMITS</u>
o-Terphenyl	80 %	60 - 120
Squalane	96 %	60 - 120

Client ID: 7499SL10  
Test Description: BTEX/GRO in soil-101/8021B  
Collected: 12/01/99 12:26

Lab ID: 04A  
Method: AK101/8021B  
Matrix: SOIL

ANALYSIS DATE: 12/07/99

ANALYST: SG

INSTRUMENT ID: NAT

Results reported on a dry weight basis.

FILE ID: N9120707.D

UNITS: mg/Kg

DILUTION: 1

Percent Moisture: 14.9

<u>PARAMETER</u>	<u>CAS # or ID</u>	<u>RESULT</u>	<u>LIMIT</u>	<u>Q</u>
Benzene	71-43-2	U	0.021	
Toluene	108-88-3	U	0.021	
Ethylbenzene	100-41-4	U	0.021	
Xylenes, Total	1330-20-7	U	0.021	
Gasoline Range Organics	VPH	U	2.1	

<u>SURROGATE</u>	<u>%RECOVERY</u>	<u>LIMITS</u>
1,4-Difluorobenzene (PID)	103 %	60 - 120
p-Bromofluorobenzene (PID)	109 %	60 - 120
1,4-Difluorobenzene (FID)	100 %	60 - 120
p-Bromofluorobenzene (FID)	85 %	60 - 120

Client ID: 7499SL10  
Test Description: DRO/RRO in soil-AK102&103  
Collected: 12/01/99 12:26

Lab ID: 04B  
Method: 3550/AK102/3  
Matrix: SOIL

EXTRACTION DATE: 12/07/99

ANALYSIS DATE: 12/07/99

ANALYST: JKG

INSTRUMENT ID: WOOF

Sample reported on a dry weight basis.

FILE ID: W9120735.D

UNITS: mg/Kg

DILUTION: 1

% MOISTURE: 14.9

<u>PARAMETER</u>	<u>CAS # or ID</u>	<u>RESULT</u>	<u>LIMIT</u>	<u>Q</u>
Diesel Range Organics	DRO	34	4.4	
Residual Range Organics	RRO	100	8.9	

<u>SURROGATE</u>	<u>%RECOVERY</u>	<u>LIMITS</u>
o-Terphenyl	85 %	60 - 120
Squalane	96 %	60 - 120

Client ID: 7499SL11  
Test Description: BTEX/GRO in soil-101/8021B  
Collected: 12/01/99 12:30

Lab ID: 05A  
Method: AK101/8021B  
Matrix: SOIL

ANALYSIS DATE: 12/07/99

ANALYST: SG

INSTRUMENT ID: NAT

Results reported on a dry weight basis.

FILE ID: N9120713.D

UNITS: mg/Kg

DILUTION: 8

Percent Moisture: 20.4

<u>PARAMETER</u>	<u>CAS # or ID</u>	<u>RESULT</u>	<u>LIMIT</u>	<u>Q</u>
Benzene	71-43-2	U	0.27	
Toluene	108-88-3	U	0.27	
Ethylbenzene	100-41-4	1.0	0.27	
Xylenes, Total	1330-20-7	15	0.27	
Gasoline Range Organics	VPH	1000	27	

<u>SURROGATE</u>	<u>%RECOVERY</u>	<u>LIMITS</u>
1,4-Difluorobenzene (PID)	D %	60 - 120
p-Bromofluorobenzene (PID)	D %	60 - 120
1,4-Difluorobenzene (FID)	D %	60 - 120
p-Bromofluorobenzene (FID)	D %	60 - 120

Client ID: 7499SL11  
Test Description: DRO/RRO in soil-AK102&103  
Collected: 12/01/99 12:30

Lab ID: 05B  
Method: 3550/AK102/3  
Matrix: SOIL

EXTRACTION DATE: 12/07/99

ANALYSIS DATE: 12/07/99

ANALYST: JKG

INSTRUMENT ID: WOOF

Sample reported on a dry weight basis.

FILE ID: W9121504.D

UNITS: mg/Kg

DILUTION: 50

% MOISTURE: 20.4

<u>PARAMETER</u>	<u>CAS # or ID</u>	<u>RESULT</u>	<u>LIMIT</u>	<u>Q</u>
Diesel Range Organics	DRO	13000	250	
Residual Range Organics	RRO	U	500	

<u>SURROGATE</u>	<u>%RECOVERY</u>	<u>LIMITS</u>
o-Terphenyl	D %	60 - 120
Squalane	D %	60 - 120

Client ID: 7499SL12  
Test Description: BTEX/GRO in soil-101/8021B  
Collected: 12/01/99 12:35

Lab ID: 06A  
Method: AK101/8021B  
Matrix: SOIL

ANALYSIS DATE: 12/07/99  
ANALYST: SG  
INSTRUMENT ID: NAT  
Results reported on a dry weight basis.

FILE ID: N9120716.D  
UNITS: mg/Kg  
DILUTION: 1  
Percent Moisture: 16.2

<u>PARAMETER</u>	<u>CAS # or ID</u>	<u>RESULT</u>	<u>LIMIT</u>	<u>Q</u>
Benzene	71-43-2	U	0.034	
Toluene	108-88-3	U	0.034	
Ethylbenzene	100-41-4	U	0.034	
Xylenes, Total	1330-20-7	U	0.034	
Gasoline Range Organics	VPH	U	3.4	

<u>SURROGATE</u>	<u>%RECOVERY</u>	<u>LIMITS</u>
1,4-Difluorobenzene (PID)	99 %	60 - 120
p-Bromofluorobenzene (PID)	99 %	60 - 120
1,4-Difluorobenzene (FID)	104 %	60 - 120
p-Bromofluorobenzene (FID)	88 %	60 - 120

Client ID: 7499SL12  
Test Description: DRO/RRO in soil-AK102&103  
Collected: 12/01/99 12:35

Lab ID: 06B  
Method: 3550/AK102/3  
Matrix: SOIL

EXTRACTION DATE: 12/07/99  
ANALYSIS DATE: 12/07/99  
ANALYST: JKG  
INSTRUMENT ID: WOOF  
Sample reported on a dry weight basis.

FILE ID: W9120722.D  
UNITS: mg/Kg  
DILUTION: 1  
% MOISTURE: 16.2

<u>PARAMETER</u>	<u>CAS # or ID</u>	<u>RESULT</u>	<u>LIMIT</u>	<u>Q</u>
Diesel Range Organics	DRO	200	4.7	
Residual Range Organics	RRO	570	9.3	

<u>SURROGATE</u>	<u>%RECOVERY</u>	<u>LIMITS</u>
o-Terphenyl	84 %	60 - 120
Squalane	93 %	60 - 120

Client ID: 33B99SD13  
Test Description: BTEX/GRO in soil-101/8021B  
Collected: 12/01/99 13:45

Lab ID: 07A  
Method: AK101/8021B  
Matrix: SOIL

ANALYSIS DATE: 12/07/99

ANALYST: SG

INSTRUMENT ID: NAT

Results reported on a dry weight basis.

FILE ID: N9120710.D

UNITS: mg/Kg

DILUTION: 1

Percent Moisture: 90.5

<u>PARAMETER</u>	<u>CAS # or ID</u>	<u>RESULT</u>	<u>LIMIT</u>	<u>Q</u>
Benzene	71-43-2	U	0.23	
Toluene	108-88-3	U	0.23	
Ethylbenzene	100-41-4	U	0.23	
Xylenes, Total	1330-20-7	U	0.23	
Gasoline Range Organics	VPH	U	23	

<u>SURROGATE</u>	<u>%RECOVERY</u>	<u>LIMITS</u>
1,4-Difluorobenzene (PID)	99 %	60 - 120
p-Bromofluorobenzene (PID)	38 M %	60 - 120
1,4-Difluorobenzene (FID)	105 %	60 - 120
p-Bromofluorobenzene (FID)	42 M %	60 - 120

Client ID: 33B99SD13  
Test Description: DRO/RRO in soil-AK102&103  
Collected: 12/01/99 13:45

Lab ID: 07B  
Method: 3550/AK102/3  
Matrix: SOIL

EXTRACTION DATE: 12/07/99

ANALYSIS DATE: 12/07/99

ANALYST: JKG

INSTRUMENT ID: WOOF

Sample reported on a dry weight basis.

FILE ID: W9120737.D

UNITS: mg/Kg

DILUTION: 1

% MOISTURE: 90.5

<u>PARAMETER</u>	<u>CAS # or ID</u>	<u>RESULT</u>	<u>LIMIT</u>	<u>Q</u>
Diesel Range Organics	DRO	1100	43	
Residual Range Organics	RRO	4000	86	

<u>SURROGATE</u>	<u>%RECOVERY</u>	<u>LIMITS</u>
o-Terphenyl	80 %	60 - 120
Squalane	89 %	60 - 120

Client ID: 45A99SL15  
Test Description: BTEX/GRO in soil-101/8021B  
Collected: 12/01/99 15:40

Lab ID: 08A  
Method: AK101/8021B  
Matrix: SOIL

ANALYSIS DATE: 12/07/99

ANALYST: SG

INSTRUMENT ID: NAT

Results reported on a dry weight basis.

FILE ID: N9120711.D

UNITS: mg/Kg

DILUTION: 1

Percent Moisture: 13.2

<u>PARAMETER</u>	<u>CAS # or ID</u>	<u>RESULT</u>	<u>LIMIT</u>	<u>Q</u>
Benzene	71-43-2	U	0.021	
Toluene	108-88-3	U	0.021	
Ethylbenzene	100-41-4	U	0.021	
Xylenes, Total	1330-20-7	U	0.021	
Gasoline Range Organics	VPH	U	2.1	

<u>SURROGATE</u>	<u>%RECOVERY</u>	<u>LIMITS</u>
1,4-Difluorobenzene (PID)	100 %	60 - 120
p-Bromofluorobenzene (PID)	102 %	60 - 120
1,4-Difluorobenzene (FID)	103 %	60 - 120
p-Bromofluorobenzene (FID)	87 %	60 - 120

Client ID: 45A99SL15  
Test Description: DRO/RRO in soil-AK102&103  
Collected: 12/01/99 15:40

Lab ID: 08B  
Method: 3550/AK102/3  
Matrix: SOIL

EXTRACTION DATE: 12/07/99

ANALYSIS DATE: 12/07/99

ANALYST: JKG

INSTRUMENT ID: WOOF

Sample reported on a dry weight basis.

FILE ID: W9120719.D

UNITS: mg/Kg

DILUTION: 1

% MOISTURE: 13.2

<u>PARAMETER</u>	<u>CAS # or ID</u>	<u>RESULT</u>	<u>LIMIT</u>	<u>Q</u>
Diesel Range Organics	DRO	U	4.5	
Residual Range Organics	RRO	23	9.0	

<u>SURROGATE</u>	<u>%RECOVERY</u>	<u>LIMITS</u>
o-Terphenyl	90 %	60 - 120
Squalane	96 %	60 - 120

Method 8021 from Test Methods for Evaluating Solid Waste, USEPA SW-846, third edition, December 1996, is used for the analysis of volatile organics; benzene, toluene, ethylbenzene, xylenes (BTEX) in a solid matrix.

---

Method AK101 from the State of Alaska Department of Environmental Conservation (ADEC), Storage Tank Program, Underground Storage Tanks Procedures Manual, 18 AAC 78, as amended through January 31, 1996; is referenced for the analysis of gasoline range organics (GRO).

The quantitation range extends from the beginning of C6 to the beginning of C10.

---

Methods AK102 & AK103  
from the State of Alaska Department of Environmental Conservation (ADEC), Storage Tank Program, Underground Storage Tanks Procedures Manual, 18 AAC 78, as amended through January 31, 1996; is referenced for the analysis of diesel range organics (DRO).

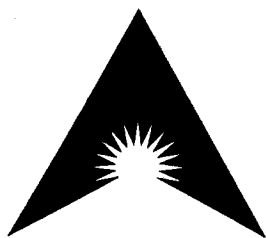
The quantitation range for AK102 extends from the beginning of C10 to the beginning of C25.

The standard used is a 1:1:1 mixture of Kerosene, DF1, and DF2.

The quantitation range for AK103 extends from the beginning of C25 to the end of C36. A mixture of 1:1 SAE 30 & SAE 40 motor oils are used for instrument calibration.

Solids are prepared via sonication according to methods AK102, AK103, and USEPA SW-846 method 3550.

---



**ANALYTICA  
ALASKA INC.**

# **QA Summary**

---

*"The Science of Analysis, The Art of Service"*

Work Order: A912008 Client: CH2M\_HILL

## CONTROL

Seq. Sample ID	Test Code	Class/ Sub/Dup	Matrix/ Sub	Ref Seq	Spk Seq	Dilution	Weight	Volume	Conv. Factor	Flag	Ver
1	GAS CCV	AK101S T I	S			1.0	1.0	1.0	1.0	SG	

Analytes	Result	Theoretical Detection		Spike Value	Rec- overy	Specs		
		Value	Limit			Low	High	
Gasoline Range Organics	1060.0860	1000.0000	100.0000	1100.000	106	75	125	Y
$\alpha,\alpha,\alpha$ -Trifluorotoluene	51.3950	50.0000	1.0000	50.0000	103	60	120	Y
p-Bromofluorobenzene-2	118.7410	100.0000	1.0000	100.0000	119	60	120	Y

## CONTROL

Seq. Sample ID	Test Code	Class/ Sub/Dup	Matrix/ Sub	Ref Seq	Spk Seq	Dilution	Weight	Volume	Conv. Factor	Flag	Ver
10	GAS CCV	AK101S T I	S			1.0	1.0	1.0	1.0	SG	

Analytes	Result	Theoretical Detection		Spike Value	Rec- overy	Specs		
		Value	Limit			Low	High	
Gasoline Range Organics	1051.2630	1000.0000	100.0000	1100.000	105	75	125	Y
$\alpha,\alpha,\alpha$ -Trifluorotoluene	50.5750	50.0000	1.0000	50.0000	101	60	120	Y
p-Bromofluorobenzene-2	104.6490	100.0000	1.0000	100.0000	105	60	120	Y

## CONTROL

Seq. Sample ID	Test Code	Class/ Sub/Dup	Matrix/ Sub	Ref Seq	Spk Seq	Dilution	Weight	Volume	Conv. Factor	Flag	Ver
16	GAS CCV	AK101S T I	S			1.0	1.0	1.0	1.0	SG	

Analytes	Result	Theoretical Detection		Spike Value	Rec- overy	Specs		
		Value	Limit			Low	High	
Gasoline Range Organics	988.9580	1000.0000	100.0000	1100.000	98.9	75	125	Y
$\alpha,\alpha,\alpha$ -Trifluorotoluene	52.5070	50.0000	1.0000	50.0000	105	60	120	Y
p-Bromofluorobenzene-2	114.0180	100.0000	1.0000	100.0000	114	60	120	Y

## CONTROL

Seq. Sample ID	Test Code	Class/ Sub/Dup	Matrix/ Sub	Ref Seq	Spk Seq	Dilution	Weight	Volume	Conv. Factor	Flag	Ver
1	102 CCV	AK102W T I	W			1.0	1.0	1.0	1.0	JKG	

Analytes	Result	Theoretical Detection		Spike Value	Rec- overy	Specs		
		Value	Limit			Low	High	
Diesel Range Organics	949.844	1000.000	200.000	1000.000	95.0	75	125	Y
o-Terphenyl	52.034	50.000	0.050	50.000	104	60	120	Y

Work Order: A912008 Client: CH2M\_HILL

CONTROL									
Seq. Sample ID	Test Code	Class/ Sub/Dup	Matrix/ Sub	Ref Seq	Spk Seq	Dilution	Weight	Volume	Conv. Factor Flag Ver
10 102 CCV	AK102W	T I	W			1.0	1.0	1.0	1.0 JKG
Theoretical Detection Spike Rec- Specs									
Analytes	Result	Value	Limit	Value	overy	Low	High		
Diesel Range Organics	1062.760	1000.000	200.000	1000.000	106	75	125		Y
o-Terphenyl	53.913	50.000	0.050	50.000	108	60	120		Y
CONTROL									
Seq. Sample ID	Test Code	Class/ Sub/Dup	Matrix/ Sub	Ref Seq	Spk Seq	Dilution	Weight	Volume	Conv. Factor Flag Ver
12 102 CCV	AK102W	T I	W			1.0	1.0	1.0	1.0 JKG
Theoretical Detection Spike Rec- Specs									
Analytes	Result	Value	Limit	Value	overy	Low	High		
Diesel Range Organics	972.275	1000.000	200.000	1000.000	97.2	75	125		Y
o-Terphenyl	50.058	50.000	0.050	50.000	100	60	120		Y
CONTROL									
Seq. Sample ID	Test Code	Class/ Sub/Dup	Matrix/ Sub	Ref Seq	Spk Seq	Dilution	Weight	Volume	Conv. Factor Flag Ver
19 102 CCV	AK102W	T I	W			1.0	1.0	1.0	1.0 JKG
Theoretical Detection Spike Rec- Specs									
Analytes	Result	Value	Limit	Value	overy	Low	High		
Diesel Range Organics	1004.785	1000.000	200.000	1000.000	100	75	125		Y
o-Terphenyl	52.233	50.000	0.050	50.000	104	60	120		Y
CONTROL									
Seq. Sample ID	Test Code	Class/ Sub/Dup	Matrix/ Sub	Ref Seq	Spk Seq	Dilution	Weight	Volume	Conv. Factor Flag Ver
21 102 CCV	AK102W	T I	W			1.0	1.0	1.0	1.0 JKG
Theoretical Detection Spike Rec- Specs									
Analytes	Result	Value	Limit	Value	overy	Low	High		
Diesel Range Organics	831.230	1000.000	200.000	1000.000	83.1	75	125		Y
o-Terphenyl	50.641	50.000	0.050	50.000	101	60	120		Y
CONTROL									
Seq. Sample ID	Test Code	Class/ Sub/Dup	Matrix/ Sub	Ref Seq	Spk Seq	Dilution	Weight	Volume	Conv. Factor Flag Ver
24 102 CCV	AK102W	T I	W			1.0	1.0	1.0	1.0 JKG
Theoretical Detection Spike Rec- Specs									
Analytes	Result	Value	Limit	Value	overy	Low	High		
Diesel Range Organics	939.476	1000.000	200.000	1000.000	93.9	75	125		Y
o-Terphenyl	52.094	50.000	0.050	50.000	104	60	120		Y

Work Order: A912008 Client: CH2M\_HILL

## BLANK

Seq. Sample ID	Test Code	Class/ Sub/Dup	Matrix/ Sub	Ref Seq	Spk Seq	Dilution	Weight	Volume	Conv. Factor	Flag	Ver
13 MB 1207-1	BTXG8S	B P	S			25	5	1.0	1.0	SG	

Analytes	Result	Detection		Specs			Y
		Limit		Low	High		
Benzene	U	0.0250					Y
Toluene	U	0.0250					Y
Ethylbenzene	U	0.0250					
Xylenes, Total	U	0.0250					
Gasoline Range Organics	U	2.5000					
1,4-Difluorobenzene	1244.175	0.0250	1.2500	99.5	60 120		
p-Bromofluorobenzene	2927.675	0.0250	2.5000	117	60 120		
1,4-Difluorobenzene-2	1291.600	0.0250	1.2500	103	60 120		
p-Bromofluorobenzene-2	2672.275	0.0250	2.5000	107	60 120		

## SPIKE

Seq. Sample ID	Test Code	Class/ Sub/Dup	Matrix/ Sub	Ref Seq	Spk Seq	Dilution	Weight	Volume	Conv. Factor	Flag	Ver
14 LCS 1207-1	BTXG8S	K S	S	13		25	5	1.0	1.0	SG	

Analytes	Result	Unspiked Result	Detection Limit	Spike Value	Rec- overy	Specs		Y
						Low	High	
Benzene	0.3110	U	0.0250	0.3260	95.4	85	115	Y
Toluene	1.8672	U	0.0250	1.9900	93.8	85	115	Y
Ethylbenzene	0.4792	U	0.0250	0.4450	108	85	115	
Xylenes, Total	2.2405	U	0.0250	2.3350	96.0	85	115	
Gasoline Range Organics	30.9903	U	2.5000	27.5000	113	75	125	
1,4-Difluorobenzene	1.2012	1244.175	0.0250	1.2500	96.1	60	120	
p-Bromofluorobenzene	2.8412	2927.675	0.0250	2.5000	114	60	120	
1,4-Difluorobenzene-2	1.3260	1291.600	0.0250	1.2500	106	60	120	
p-Bromofluorobenzene-2	2.6341	2672.275	0.0250	2.5000	105	60	120	

## SPIKE DUPLICATE

Seq. Sample ID	Test Code	Class/ Sub/Dup	Matrix/ Sub	Ref Seq	Spk Seq	Dilution	Weight	Volume	Conv. Factor	Flag	Ver
15 LCS 1207-2	BTXG8S	K S D	S	13	14	25	5	1.0	1.0	SG	

Analytes	Result	Unspiked Result	Detection Limit	Spike Value	Rec- overy	Specs		RPD Specs		Reference		Y
						Low	High	Low	High	Recovery	RPD	
Benzene	0.3120	U	0.0250	0.3260	95.7	85	115		20	95.4	0.314	Y
Toluene	1.8317	U	0.0250	1.9900	92.0	85	115		20	93.8	1.94	Y
Ethylbenzene	0.4665	U	0.0250	0.4450	105	85	115		20	108	2.82	
Xylenes, Total	2.1876	U	0.0250	2.3350	93.7	85	115		20	96.0	2.42	
Gasoline Range Organics	30.9219	U	2.5000	27.5000	112	75	125		20	113	0.889	
1,4-Difluorobenzene	1.1915	1244.175	0.0250	1.2500	95.3	60	120		20	96.1	0.836	
p-Bromofluorobenzene	2.7190	2927.675	0.0250	2.5000	109	60	120		20	114	4.48	
1,4-Difluorobenzene-2	1.3294	1291.600	0.0250	1.2500	106	60	120		20	106	0	
p-Bromofluorobenzene-2	2.8719	2672.275	0.0250	2.5000	115	60	120		20	105	9.09	

Work Order: A912008 Client: CH2M\_HILL

## CONTROL

Seq. Sample ID	Test Code	Class/ Sub/Dup	Matrix/ Sub	Ref Seq	Spk Seq	Dilution	Weight	Volume	Conv. Factor	Flag	Ver
2 8020 CCV	BTX_8S	T I	S			1.0	1.0	1.0	1.0	SG	

Analytes	Theoretical Detection			Spike	Rec-	Specs		
	Result	Value	Limit	Value	overy	Low	High	
Benzene	49.5940	50.0000	1.0000	13.0400	99.2	85	115	Y
Toluene	47.3740	50.0000	1.0000	79.6000	94.7	85	115	Y
Ethylbenzene	46.5570	50.0000	1.0000	17.8000	93.1	85	115	
Xylenes, Total	139.2870	150.0000	1.0000	93.4000	92.9	85	115	
1,4-Difluorobenzene	51.3500	50.0000	1.0000	50.0000	103	60	120	
p-Bromofluorobenzene	117.7730	100.0000	1.0000	100.0000	118	60	120	

## CONTROL

Seq. Sample ID	Test Code	Class/ Sub/Dup	Matrix/ Sub	Ref Seq	Spk Seq	Dilution	Weight	Volume	Conv. Factor	Flag	Ver
11 8020 CCV	BTX_8S	T I	S			1.0	1.0	1.0	1.0	SG	

Analytes	Theoretical Detection			Spike	Rec-	Specs		
	Result	Value	Limit	Value	overy	Low	High	
Benzene	45.2620	50.0000	1.0000	13.0400	90.5	85	115	Y
Toluene	46.8670	50.0000	1.0000	79.6000	93.7	85	115	Y
Ethylbenzene	46.1440	50.0000	1.0000	17.8000	92.3	85	115	
Xylenes, Total	137.9260	150.0000	1.0000	93.4000	92.0	85	115	
1,4-Difluorobenzene	50.4650	50.0000	1.0000	50.0000	101	60	120	
p-Bromofluorobenzene	115.3810	100.0000	1.0000	100.0000	115	60	120	

## CONTROL

Seq. Sample ID	Test Code	Class/ Sub/Dup	Matrix/ Sub	Ref Seq	Spk Seq	Dilution	Weight	Volume	Conv. Factor	Flag	Ver
17 8020 CCV	BTX_8S	T I	S			1.0	1.0	1.0	1.0	SG	

Analytes	Theoretical Detection			Spike	Rec-	Specs		
	Result	Value	Limit	Value	overy	Low	High	
Benzene	48.3390	50.0000	1.0000	13.0400	96.7	85	115	Y
Toluene	47.3040	50.0000	1.0000	79.6000	94.6	85	115	Y
Ethylbenzene	46.5540	50.0000	1.0000	17.8000	93.1	85	115	
Xylenes, Total	138.6080	150.0000	1.0000	93.4000	92.4	85	115	
1,4-Difluorobenzene	50.2730	50.0000	1.0000	50.0000	101	60	120	
p-Bromofluorobenzene	115.6300	100.0000	1.0000	100.0000	116	60	120	

Work Order: A912008 Client: CH2M\_HILL

## BLANK

Seq. Sample ID	Test Code	Class/ Sub/Dup	Matrix/ Sub	Ref Seq	Spk Seq	Dilution	Weight	Volume	Conv. Factor	Flag	Ver
3	MB1 1207	DRRROS B P	S			1.0	24.410	1.0	1.0		JKG

Analytes	Result	Limit	Detection			Specs	
			Value	Limit	Low	High	
Diesel Range Organics	U	4.10					
Residual Range Organics	U	8.19					
o-Terphenyl	42.540	0.002	2.048	85.1	60	120	
Squalane	45.301	0.002	2.048	90.6	60	120	

## SPIKE

Seq. Sample ID	Test Code	Class/ Sub/Dup	Matrix/ Sub	Ref Seq	Spk Seq	Dilution	Weight	Volume	Conv. Factor	Flag	Ver
7	K912008-08K	DRRROS K M	S	6		1.0	26.046	1.0	1.0		JKG

Analytes	Result	Limit	Value	Recovery	Specs	
					Low	High
Diesel Range Organics	89.51	U	4.42	101	60	120
Residual Range Organics	106.47	23.09	8.85	94.3	60	120
o-Terphenyl	1.780	2.031	0.002	80.5	60	120
Squalane	1.866	2.152	0.002	84.4	60	120

## SPIKE DUPLICATE

Seq. Sample ID	Test Code	Class/ Sub/Dup	Matrix/ Sub	Ref Seq	Spk Seq	Dilution	Weight	Volume	Conv. Factor	Flag	Ver
8	K912008-08K	DRRROS K M D	S	6	7	1.0	25.765	1.0	1.0		JKG

Analytes	Result	Limit	Value	Recovery	Specs		RPD Specs		Reference	
					Low	High	Low	High	Recovery	RPD
Diesel Range Organics	85.37	U	4.47	95.5	60	120			20	101
Residual Range Organics	105.69	23.09	8.94	92.4	60	120			20	94.3
o-Terphenyl	1.769	2.031	0.002	79.1	60	120				80.5
Squalane	2.083	2.152	0.002	93.2	60	120				84.4

## SPIKE

Seq. Sample ID	Test Code	Class/ Sub/Dup	Matrix/ Sub	Ref Seq	Spk Seq	Dilution	Weight	Volume	Conv. Factor	Flag	Ver
4	LCS1 1207	DRRROS K S	S	3		1.0	25.094	1.0	1.0		JKG

Analytes	Result	Limit	Value	Recovery	Specs	
					Low	High
Diesel Range Organics	79.16	U	3.99	99.3	60	120
Residual Range Organics	71.18	U	7.97	89.3	60	120
o-Terphenyl	1.599	42.540	0.002	80.2	60	120
Squalane	1.840	45.301	0.002	92.3	60	120

Work Order: A912008 Client: CH2M\_HILL

## SPIKE DUPLICATE

Seq. Sample ID	Test Class/ Code	Matrix/ Sub/Dup	Ref Spk Sub	Seq Seq	Dilution	Weight	Volume	Conv. Factor	Flag	Ver
5 LCS1 1207	DRRROS	K S D	S	3 4	1.0	24.383	1.0	1.0		JKG

Analytes	Result	Unspiked Result	Detection Limit	Spike Value	Rec-overly	Specs		RPD Specs		Reference	
						Low	High	Low	High	Recovery	RPD
Diesel Range Organics	85.54	U	4.10	82.02	104	60	120		20	99.3	4.62 Y
Residual Range Organics	80.28	U	8.20	82.02	97.9	60	120		20	89.3	9.19 Y
o-Terphenyl	1.725	42.540	0.002	2.051	84.1	60	120			80.2	4.75
Squalane	2.133	45.301	0.002	2.051	104	60	120			92.3	11.9

## CONTROL

Seq. Sample ID	Test Class/ Code	Matrix/ Sub/Dup	Ref Spk Sub	Seq Seq	Dilution	Weight	Volume	Conv. Factor	Flag	Ver
2 103 CCV	RRO_W	T I	W		1.0	1.0	1.0	1.0		JKG

Analytes	Result	Theoretical Value	Detection Limit	Spike Value	Rec-overly	Specs		
						Low	High	
Residual Range Organics	1159.83	1000.00	200.00	1000.00	116	75	125	Y
Squalane	53.397	50.000	0.050	60.000	107	60	120	Y

## CONTROL

Seq. Sample ID	Test Class/ Code	Matrix/ Sub/Dup	Ref Spk Sub	Seq Seq	Dilution	Weight	Volume	Conv. Factor	Flag	Ver
11 103 CCV	RRO_W	T I	W		1.0	1.0	1.0	1.0		JKG

Analytes	Result	Theoretical Value	Detection Limit	Spike Value	Rec-overly	Specs		
						Low	High	
Residual Range Organics	1175.44	1000.00	200.00	1000.00	118	75	125	Y
Squalane	53.889	50.000	0.050	60.000	108	60	120	Y

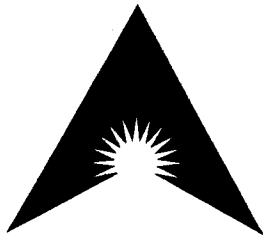
## CONTROL

Seq. Sample ID	Test Class/ Code	Matrix/ Sub/Dup	Ref Spk Sub	Seq Seq	Dilution	Weight	Volume	Conv. Factor	Flag	Ver
13 103 CCV	RRO_W	T I	W		1.0	1.0	1.0	1.0		JKG

Analytes	Result	Theoretical Value	Detection Limit	Spike Value	Rec-overly	Specs		
						Low	High	
Residual Range Organics	1186.80	1000.00	200.00	1000.00	119	75	125	Y
Squalane	53.668	50.000	0.050	60.000	107	60	120	Y

Work Order: A912008 Client: CH2M\_HILL

CONTROL									
Seq. Sample ID	Test Code	Class/ Sub/Dup	Matrix/ Sub	Ref Seq	Spk Seq	Dilution	Weight	Volume	Conv. Factor Flag Ver
20 103 CCV	RRO_W	T I	W			1.0	1.0	1.0	1.0 JKG
Theoretical Detection Spike Rec- Specs									
Analytes	Result	Value	Limit	Value	overy	Low	High		
Residual Range Organics	1186.56	1000.00	200.00	1000.00	119	75	125		Y
Squalane	52.483	50.000	0.050	60.000	105	60	120		Y
CONTROL									
Seq. Sample ID	Test Code	Class/ Sub/Dup	Matrix/ Sub	Ref Seq	Spk Seq	Dilution	Weight	Volume	Conv. Factor Flag Ver
22 103 CCV	RRO_W	T I	W			1.0	1.0	1.0	1.0 JKG
Theoretical Detection Spike Rec- Specs									
Analytes	Result	Value	Limit	Value	overy	Low	High		
Residual Range Organics	985.81	1000.00	200.00	1000.00	98.6	75	125		Y
Squalane	46.911	50.000	0.050	60.000	93.8	60	120		Y
CONTROL									
Seq. Sample ID	Test Code	Class/ Sub/Dup	Matrix/ Sub	Ref Seq	Spk Seq	Dilution	Weight	Volume	Conv. Factor Flag Ver
25 103 CCV	RRO_W	T I	W			1.0	1.0	1.0	1.0 JKG
Theoretical Detection Spike Rec- Specs									
Analytes	Result	Value	Limit	Value	overy	Low	High		
Residual Range Organics	822.99	1000.00	200.00	1000.00	82.3	75	125		Y
Squalane	42.709	50.000	0.050	60.000	85.4	60	120		Y

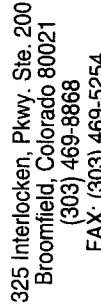


**ANALYTICA  
ALASKA INC.**

# **Support Documentation**

---

*"The Science of Analysis, The Art of Service"*



**Quote:**

## Chain of Custody Record / Analysis Request

PAGE 1 OF 2

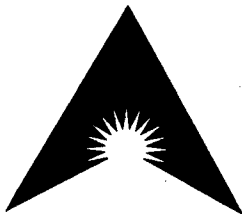
325 Interlocken, Pkwy. Ste. 200  
Broomfield, Colorado 80021  
(303) 469-8868  
FAX: (303) 469-5254

**Quote:**

[www.analyticagroup.com](http://www.analyticagroup.com)

## Chain of Custody Record / Analysis Request

[illegible]



## Analytica Alaska Inc.

811 W. 8th Ave Anchorage, Alaska 99501 (907) 258-2155 (907) 258-6634 fx (ADEC UST-014)

### Sample Cooler Receipt Form

Laboratory Group Number (LGN):	A912008
Date Cooler Opened:	12/03/99
Recipients Initials:	TD
Client Name:	CUZM Hill
Project Name:	USCG PA

#### Cooler #1

Cooler Exam	Yes	No	Specify Temp. (4°C/-2°C):
Cooler Temperature Acceptable?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	3.1
Custody Seals Acceptable?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	
Airbills / Delivery Acceptable?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	
CoC Included With Cooler?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	

Sample Containers Exam	Yes	No
Sample Condition Acceptable?	<input checked="" type="checkbox"/>	<input type="checkbox"/>
Correct Sampling Containers?	<input checked="" type="checkbox"/>	<input type="checkbox"/>
Correct Sampling Preservative?	<input checked="" type="checkbox"/>	<input type="checkbox"/>
Sufficient Sample Volume?	<input checked="" type="checkbox"/>	<input type="checkbox"/>
Containers Identified Correctly?	<input checked="" type="checkbox"/>	<input type="checkbox"/>

Chain of Custody (CoC) Exam	Yes	No
Project Identifiable From CoC?	<input checked="" type="checkbox"/>	<input type="checkbox"/>
Signatures/Dates/Times Correct?	<input checked="" type="checkbox"/>	<input type="checkbox"/>
Sample Bottles/CoC Correspond?	<input checked="" type="checkbox"/>	<input type="checkbox"/>

#### Cooler #2

Yes	No	Specify Temp. (4°C/-2°C):

Yes	No

Yes	No

#### Cooler #3

Yes	No	Specify Temp. (4°C/-2°C):

Yes	No

Yes	No

<b>Discrepancy Resolution</b>	
Client Contact & Company:	
Date Contacted:	
Discrepancy:	
Resolution:	

## **Appendix B**

### **GPS Survey**

---

USCG Annette Island PA GPS survey coordinates

Point	Vertical NAVD88 Elevations	Horizontal NAD 27		Description
		Coors Northing (US Survey Foot)	Horizontal NAD 27 Coors Easting (US Survey Foot)	
91	67.582	1189201.448	3118033.875	Survey base station benchmark
89	87.002	1178808.357	3128347.772	Site 33B, stake A1100 DD2-SO
88	83.462	1178645.325	3128322.049	Site 33B, monitoring well A4000 MW1
87	83.961	1178713.629	3128303.814	Site 33B, stake A4000 SW/SE2
86	84.032	1178701.873	3128291.742	Site 33B, stake A4000 SO6
85	84.886	1178679.92	3128283.967	Site 33B, sample location 33B99SD13
84	84.318	1178700.238	3128248.39	Site 33B, stake A4000 SW/SE1 (sheen on water)
83	85.051	1178702.233	3128263.458	Site 33B, stake A4000 SO5
82	90.916	1178784.946	3128291.083	Site 33B, east firing range
81	89.858	1178657.119	3127871.623	Site 33B, fork intersection
80	87.407	1178316.583	3128028.029	Site 33B, stake A5000 SW1
79	89.262	1178237	3127892.144	Site 33B, stake A1100 DD3
78	88.153	1178312.653	3127857.208	Site 33B, stake A5000 SO2
77	106.37	1177342.448	3123754.302	Site 72, miscellaneous hangar PCB runoff points by boiler building
76	104.935	1177238.471	3123782.337	Site 72, miscellaneous hangar PCB runoff points by boiler building
75	104.984	1177248.638	3123764.5	Site 72, miscellaneous hangar PCB runoff points by boiler building
74	105.758	1177275.582	3123758.389	Site 72, miscellaneous hangar PCB runoff points by boiler building
73	105.991	1177308.679	3123748.17	Site 72, miscellaneous hangar PCB runoff points by boiler building and background field screen location
72	106.715	1177300.954	3123788.167	Site 72, miscellaneous hangar PCB runoff points by boiler building
71	106.702	1177280.831	3123818.212	Site 72, miscellaneous hangar PCB runoff points by boiler building
70	107.056	1177311.809	3123809.948	Site 72, miscellaneous hangar PCB runoff points by boiler building
69	106.797	1177303.268	3123826.415	Site 72, miscellaneous hangar PCB runoff points by boiler building
68	108.256	1177280.365	3123872.913	Site 72, miscellaneous hangar PCB runoff points by boiler building
67	108.219	1177300.561	3123861.452	Site 75, road west of hangar
66	107.277	1177302.593	3123899.651	Site 75, miscellaneous hangar PCB runoff points
65	107.699	1177317.446	3123886.688	Site 75, miscellaneous hangar PCB runoff points
64	107.426	1177357.321	3123880.4	Site 75, miscellaneous hangar PCB runoff points
63	106.489	1177416.975	3123921.087	Site 75, miscellaneous hangar PCB runoff points
62	106.82	1177386.172	3123892.594	Site 75, miscellaneous hangar PCB runoff points
61	107.144	1177370.059	3123904.48	Site 75, miscellaneous hangar PCB runoff points
60	105.237	1177519.429	3124267.742	Site 75, miscellaneous hangar PCB runoff points
59	104.943	1177555.921	3124276.692	Site 75, miscellaneous hangar tarmac points
58	104.749	1177589.654	3124254.767	Site 75, miscellaneous hangar tarmac points
57	104.377	1177622.24	3124226.669	Site 75, miscellaneous hangar tarmac points
56	103.651	1177691.039	3124235.487	Site 75, miscellaneous hangar tarmac points
55	103.605	1177695.366	3124281.785	Site 75, miscellaneous hangar tarmac points
54	103.115	1177731.966	3124312.94	Site 75, miscellaneous hangar tarmac points

USCG Annette Island PA GPS survey coordinates

Point	Vertical NAVD88 Elevations	Horizontal NAD 27		Description
		Coors Northing (US Survey Foot)	Horizontal NAD 27 Coors Easting (US Survey Foot)	
53	102.58	117804.241	3124350.74	Site 75, miscellaneous hangar tarmac points
52	102.491	1177834.769	3124273.712	Site 75, miscellaneous hangar tarmac points
51	102.625	1177812.518	3124231.507	Site 75, miscellaneous hangar tarmac points
50	102.982	1177809.849	3124169.622	Site 75, miscellaneous hangar tarmac points
49	102.724	1177799.311	3124116.619	Site 75, miscellaneous hangar tarmac points
48	103.554	1177765.001	3124081.214	Site 75, miscellaneous hangar tarmac points
47	103.746	1177742.066	3124033.504	Site 75, miscellaneous hangar tarmac points
46	104.662	1177665.492	3124014.631	Site 75, miscellaneous hangar tarmac points
45	104.92	1177631.984	3124062.198	Site 75, miscellaneous hangar tarmac points
44	105.074	1177591.067	3124106.393	Site 75, miscellaneous hangar tarmac points
43	105.418	1177561.715	3124133.918	Site 75, miscellaneous hangar tarmac points
42	105.302	1177560.828	3124177.611	Site 75, miscellaneous hangar tarmac points
41	105.615	1177522.661	3124195.192	Site 75, miscellaneous hangar tarmac points
40	105.952	1177466.654	3124183.493	Site 75, miscellaneous hangar tarmac points
39	106.281	1177436.905	3124160.475	Site 75, miscellaneous hangar tarmac points
38	106.805	1177442.997	3124094.658	Site 75, miscellaneous hangar tarmac points
37	106.566	1177478.689	3124051.367	Site 75, miscellaneous hangar tarmac points
36	105.819	1177536.141	3124062.223	Site 75, miscellaneous hangar tarmac points
35	105.78	1177567.474	3124006.473	Site 75, miscellaneous hangar tarmac points
34	106.337	1177536.386	3123972.956	Site 71A, NE corner, hangar vehicle pad
33	108.101	1177165.157	3123997.504	Site 75, hangar SW corner
32	105.115	1177227.693	3123843.51	Site 72, SW corner of boiler building #24
31	106.918	1177187.375	3123902.452	Site 74, sample location 7499SL09
30	106.941	1177197.257	3123887.813	Site 74, 5 feet due north of sample location 7499SL11
29	106.412	1177285.253	3123809.775	Site 72, approximate former transformer location
28	106.837	1177616.08	3123665.512	Site 68, NW corner
27	109.014	1177610.73	3123669.353	Site 68, sample location 6899PT07
26	106.723	1177595.353	3123671.263	Site 68, SW corner
25	110.838	1177445.99	3123515.856	Site 69A, sample location 69A99SL06
23	108.759	1177473.484	3123579.648	Site 69A, sample location 69A99SL06
22	110.194	1177522.447	3123570.017	Site 69A, NNW corner
21	108.886	1177541.89	3123631.106	Site 69A, sample location 69A99SL05
20	109.935	1177536.993	3123626.661	Site 69A, NNE corner
19	110.448	1177489.956	3123688.871	Site 69A, ENE corner
18	38.295	1186767.917	3129273.164	Site 47A, stake PC-03
17	38.825	1186776.485	3129287.525	Site 47A, stake PC-05
16	44.821	1186964.894	3129292.923	Site 47A, entrance to parking circle.
15	40.748	1187421.64	3128860.992	Site 44, USCG housing AST saddles.

USCG Annette Island PA GPS survey coordinates

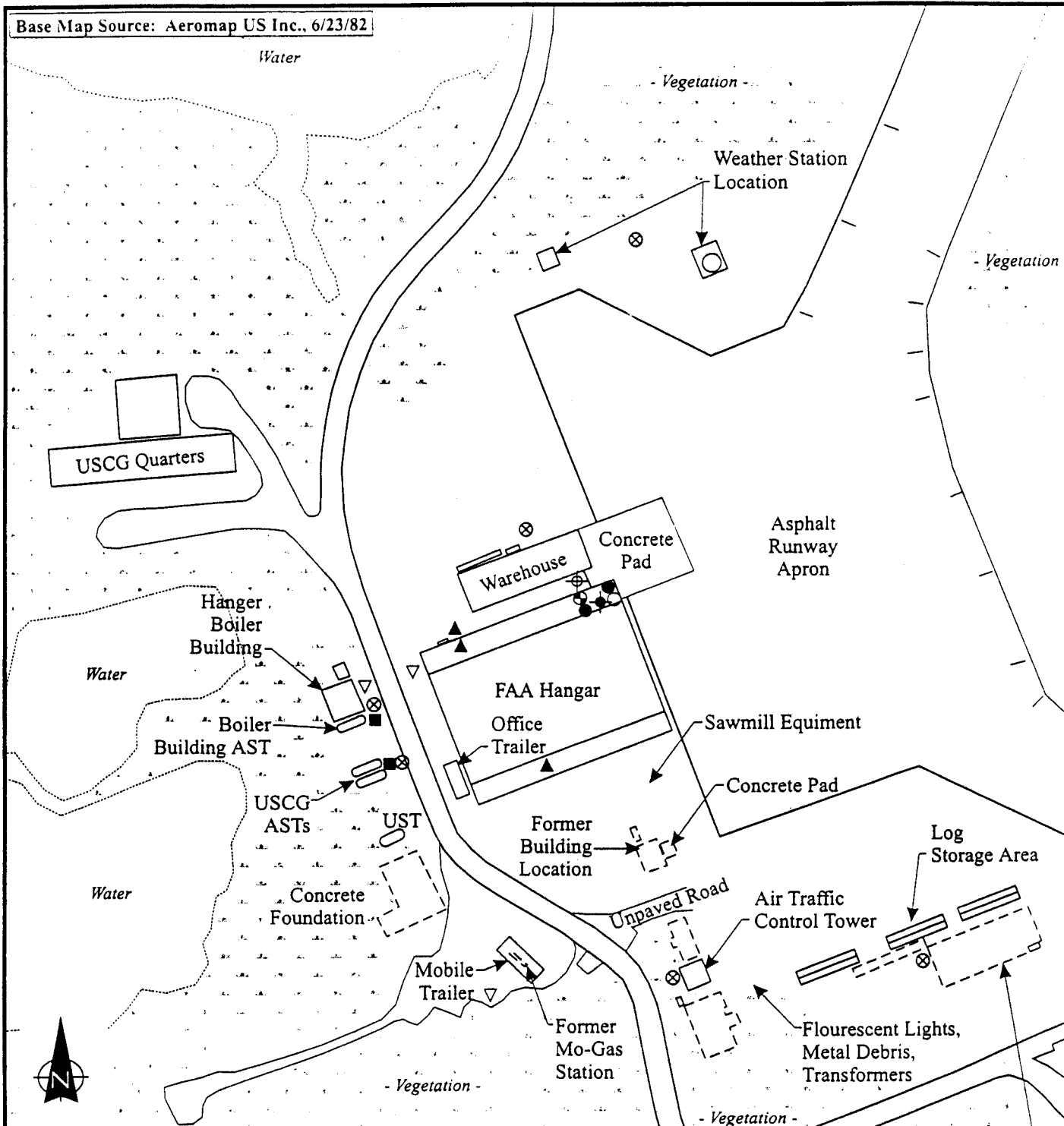
Point	Horizontal NAD 27		Horizontal NAD 27 Coors		Description
	Vertical NAVD88 Elevations	Coors Northing (US Survey Foot)	Eastings (US Survey Foot)		
14	35.097	1187594.414	3128933.255	Site 40, Southwest corner of oil/water separator.	
12	22.46	1188024.55	3129223.283	Site 44, approximate USCG housing UST location.	
11	23.598	1187923.254	3129109.004	Site 44, approximate USCG housing UST location.	
10	25.542	1187776.408	3128906.707	Site 45A, sample location 45A99SL15. X, Y only. Z is about 2 feet below survey elevation.	
9	21.243	1187257.085	3128125.67	Site 44, a USCG housing corner.	
8	22.569	1187522.684	3128596.713	Site 44, a USCG housing corner.	
7	30.742	1187408.13	3128655.963	Site 44, a USCG housing corner.	
6	48.326	1187144.089	3128849.332	Site 46, firestation pipe cap.	
5	49.808	1187172.79	3128792.955	Site 46, northwest corner of the firestation.	
4	45.187	1187173.212	3128798.425	Site 46, sample location 4699SL14.	
3	47.5	1187165.37	3128844.877	Site 46, northeast corner of the firestation.	
2	27.235	1186878.81	3131137.772	FAA point. FAA gas station survey monument	
1	107.625	1177340.721	3124133.734	FAA point. Estimated center point of hangar door	
ANNE USCG B	67.59	1189201.432	3118033.853		



## **Appendix C**

### **Figures and Table from Annette Island Brownfields Investigation**

---



**KEY:**

- |   |  |
|---|--|
| <p>--- Former Structure</p> <p>▲ Transformer Oil Sample, USAED, Alaska, 1989</p> <p>▽ Drum Sample, USAED, Alaska, 1989</p> <p>■ Soil Sample, USAED, Alaska, 1989</p> <p>● Transformer Oil Sample, FAA, 1991</p> <p>○ Wipe Sample, FAA, 1994</p> | <p>⊕ Multiple Soil Samples, FAA, 1995</p> <p>⊙ Multiple Wipe Samples, FAA, 1995</p> <p>⊗ Multiple Concrete Samples, FAA, 1995</p> <p>⊗ Soil Sample, REI, 1997</p> <p>AST Aboveground Storage Tank</p> <p>FAA Federal Aviation Administration</p> |
|---|--|

USCG United States Coast Guard  
UST Underground Storage Tank



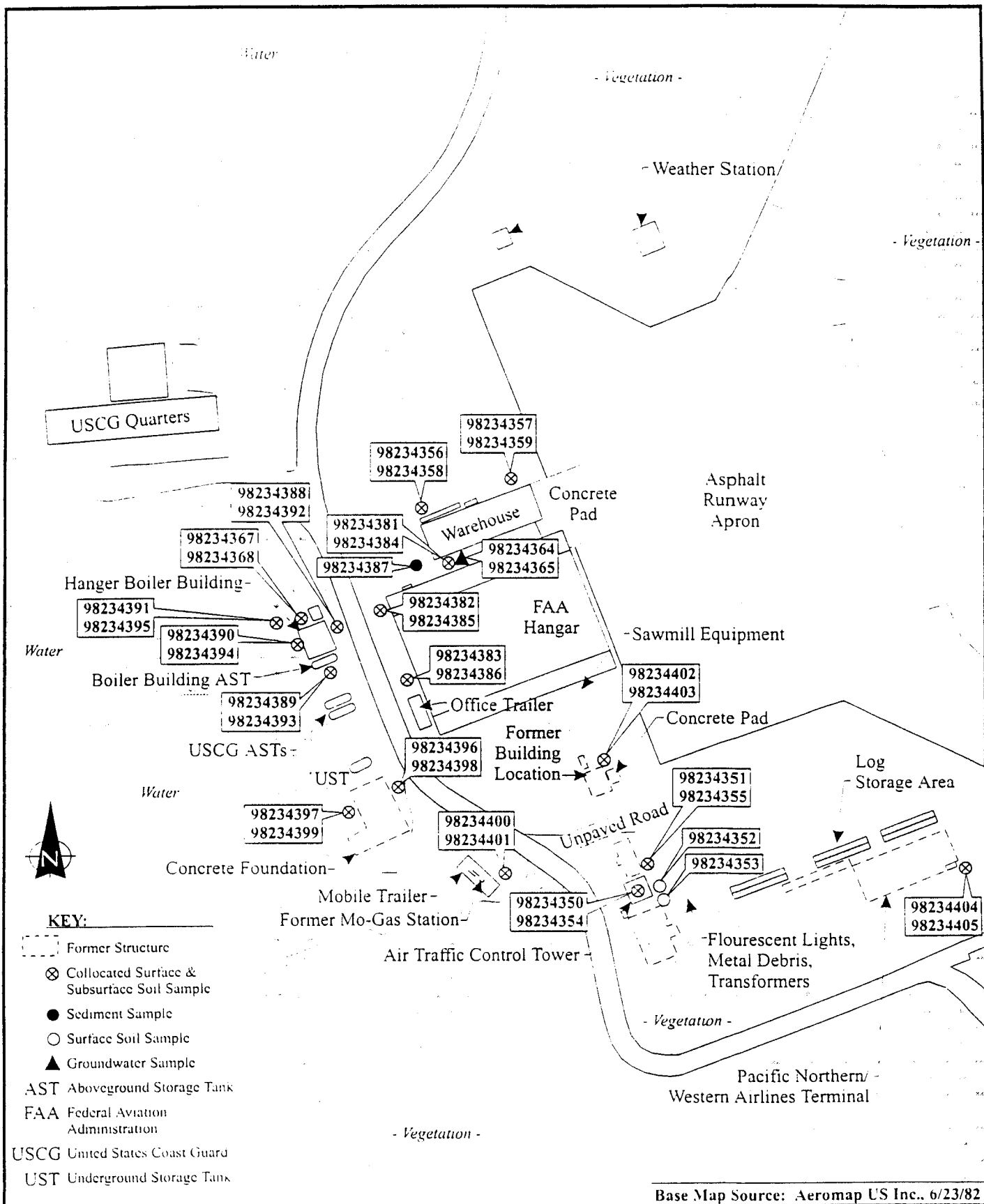
**ecology and environment, inc.**  
International Specialists in the Environment  
Anchorage, Alaska

**ANNETTE ISLAND  
BROWNFIELDS SITE ASSESSMENT**  
Metlakatla, Alaska

0 133' 266'  
Approximate Scale in Feet

**Figure 2-10  
FAA HANGAR FACILITY  
PREVIOUS  
SAMPLE LOCATION MAP**

Drawn: AES	DATE: 2/10/99	JOB NO.: BH0201SIF0	Dwg.No.: BH0201 2-10
------------	---------------	---------------------	----------------------



**ecology and environment, inc.**  
 International Specialists in the Environment  
 Anchorage, Alaska

ANNETTE ISLAND  
 BROWNFIELDS SITE ASSESSMENT  
 Metlakatla, Alaska

Figure 3-4  
 FAA HANGAR FACILITY  
 SAMPLE LOCATION MAP

0 133' 266'  
 Approximate Scale in Feet

Drawn: AES	DATE: 2/4/99	JOB NO. BH0201SIF01	Dwg.No. BH0201 3-4
---------------	-----------------	------------------------	-----------------------

Table 3-11

**FAA HANGAR FACILITY  
SURFACE SOIL SAMPLES ANALYTICAL RESULTS SUMMARY  
ANNETTE ISLAND, ALASKA**

START Sample ID	BCG01SS 98234373	Background	MIC Soil Cleanup Levels	EPA Region 9 Residential Soil PRG	EPA Region 9 Industrial Soil PRG	Alaska Soil Cleanup Levels <sup>a</sup>	HA01SS 98234381	Hangar Building	HA02SS 98234382	Hangar Building	HA03SS 98234383	Boiler Building	HB01SS 98234388	Boiler Building	HB02SS 98234389	Boiler Building
<b>VOCs (µg/kg)</b>																
1,2,4-Trichlorobenzene	NA	-	-	480,000	1,700,000	1,700	NA	NA	NA	NA	NA	4.5 UJL	2.2 U	2.6 UJL	5.2 UJL	5.2 UJL
Benzene, 1,2,4-trimethyl-	NA	-	-	51,000	170,000	-	NA	NA	NA	NA	NA	2.2 U	2.2 U	2.6 UJL	2.6 UJL	2.6 UJL
p-Isopropyltoluene	NA	-	-	-	-	-	NA	NA	NA	NA	NA	-	-	-	-	-
<b>SVOCs (µg/kg)</b>																
1,2,4-Trichlorobenzene	NA	-	-	480,000	1,700,000	1,700	NA	NA	NA	NA	NA	137 U	137 U	137 U	152 U	152 U
4-Methylphenol	NA	-	-	270,000	5,300,000	-	NA	NA	NA	NA	NA	137 U	137 U	137 U	152 U	152 U
Aniline	NA	-	-	14,000,000	220,000,000	3,900,000	NA	NA	NA	NA	NA	137 U	137 U	137 U	152 U	152 U
Benzofluoranthene	NA	-	-	560	3,600	5,500	NA	NA	NA	NA	NA	79.4 JQ	79.4 JQ	79.4 JQ	152 U	152 U
Benzofluoranthene	NA	-	-	56	360	2,400	NA	NA	NA	NA	NA	94.5 JQ	94.5 JQ	94.5 JQ	152 U	152 U
Benzofluoranthene	NA	-	-	560	3,600	17,000	NA	NA	NA	NA	NA	137 U	137 U	137 U	152 U	152 U
Benzofluoranthene	NA	-	-	5,600	36,000	170,000	NA	NA	NA	NA	NA	137 U	137 U	137 U	152 U	152 U
Benzofluoranthene	NA	-	-	100,000,000	100,000,000	350,000	NA	NA	NA	NA	NA	137 U	137 U	137 U	152 U	152 U
Benzofluoranthene	NA	-	-	33,000	210,000	1,100,000	NA	NA	NA	NA	NA	683 U	683 U	683 U	762 U	762 U
Benzofluoranthene	NA	-	-	56,000	360,000	550,000	NA	NA	NA	NA	NA	112 JQ	112 JQ	112 JQ	152 U	152 U
Benzofluoranthene	NA	-	-	100,000,000	100,000,000	1,200,000	NA	NA	NA	NA	NA	137 U	137 U	137 U	152 U	152 U
Benzofluoranthene	NA	-	-	5,500,000	110,000,000	15,000,000	NA	NA	NA	NA	NA	152	152	152	152 U	152 U
Benzofluoranthene	NA	-	-	8,000,000	37,000,000	1,900,000	NA	NA	NA	NA	NA	56.3 JQ	56.3 JQ	56.3 JQ	152 U	152 U
Benzofluoranthene	NA	-	-	560	3,600	50,000	NA	NA	NA	NA	NA	267	267	267	152 U	152 U
Benzofluoranthene	NA	-	-	470,000	3,200,000	2,600	NA	NA	NA	NA	NA	137 U	137 U	137 U	152 U	152 U
Benzofluoranthene	NA	-	-	55,000	190,000	38,000	NA	NA	NA	NA	NA	137 U	137 U	137 U	152 U	152 U
Benzofluoranthene	NA	-	-	-	-	-	NA	NA	NA	NA	NA	137 U	137 U	137 U	152 U	152 U
Benzofluoranthene	NA	-	-	-	-	-	NA	NA	NA	NA	NA	137 U	137 U	137 U	152 U	152 U
Benzofluoranthene	NA	-	-	1,500,000	26,000,000	1,400,000	NA	NA	NA	NA	NA	89.2 JQ	89.2 JQ	89.2 JQ	152 U	152 U
Benzofluoranthene	NA	-	-	-	-	-	NA	NA	NA	NA	NA	137 U	137 U	137 U	152 U	152 U
<b>Alaska Methods (mg/kg)</b>																
Toluene	NA	880	520	520	520	48	NA	NA	NA	NA	NA	0.039 U	0.039 U	0.039 U	0.046 U	0.046 U
m,p-Xylenes	NA	320	210	210	210	69	NA	NA	NA	NA	NA	0.039 U	0.039 U	0.039 U	0.046 U	0.046 U
o-Xylene	NA	320	280	280	280	69	NA	NA	NA	NA	NA	0.039 U	0.039 U	0.039 U	0.046 U	0.046 U
ChRO	NA	-	-	-	-	260	NA	NA	NA	NA	NA	1.9 U	1.9 U	1.9 U	2.3 U	2.3 U
PRO (nC10-nC25)	NA	-	-	-	-	230	NA	NA	NA	NA	NA	230	230	230	7,200	7,200
PRO (nC25-nC36)	NA	-	-	-	-	9,700	NA	NA	NA	NA	NA	530	530	530	950	950

Key at the end of the table

Table 3-11

**FAA HANGAR FACILITY  
SURFACE SOIL SAMPLES ANALYTICAL RESULTS SUMMARY  
ANNETTE ISLAND, ALASKA**

START Sample ID	HC01SS 98234373	MIC Soil Cleanup Levels	EPA Region 9 Residential Soil PRG	EPA Region 9 Industrial Soil PRG	Alaska Soil Cleanup Levels*	HA01SS 98234381	HA02SS 98234382	HA03SS 98234383	HB01SS 98234388	HB02SS 98234389
Sample Location	Background					Hangar Building	Hangar Building	Hangar Building	Boiler Building	Boiler Building
<b>Inorganics (mg/kg)</b>										
Aluminum	28,200	-	75,000	100,000	-	6,770	8,130	9,780	7,410	7,330
Arsenic	5.07	-	0.38	3	1.8	1.7	3.06	2.36	2.05	2.8
Barium	79.2	-	5,200	100,000	982	29.5	51.4	209	56.9	36.5
Beryllium	0.38	-	150	3,400	38	0.11	0.18	0.16	0.2	0.21
Cadmium	0.2 U	-	37	930	4.5	0.78 U	1.55 U	0.72 U	0.74 U	1.25 U
Calcium	1,740	-	-	-	-	2,000	2,670	6,310	3,020	2,130
Chromium	18.9	-	210	450	23	113	69.7	98.3	49	126
Cobalt	12.6	-	3,300	29,000	-	79.3	31.5	16.4	23.9	48.2
Copper	108	-	2,800	70,000	-	18.8	29.3	70.8	44.5	29.4
Iron	30,400	-	22,000	100,000	-	45,400	27,800	30,700	22,100	31,900
Lead	2.95	1,000	400	1,000	400	251 J	246	124	137	206
Magnesium	10,400	-	-	-	-	16,100	60,000	51,400	42,100	87,000
Manganese	272	-	3,100	45,000	-	792	389	244	308	500
Mercury	0.0578	-	22	560	1	0.0296	0.077	0.161	0.218	0.0407
Nickel	9.21	-	1,500	37,000	78	729	267	158	196	420
Potassium	3,040	-	-	-	-	248	917	620	864	500
Selenium	0.82	-	370	9,400	3	0.75 U	0.15 U	0.67	0.3 U	0.75 U
Sodium	249	-	-	-	-	126	183	204	208	151
Vanadium	96.2	-	520	13,000	3,050	9.4	23.5	16.3	21.9	16.1
Zinc	39.8	-	22,000	100,000	8,100	90.7	126	672	172	134
<b>Pesticides (ug/kg)</b>										
Gamma-Chlordane	NA	-	1,600	12,000	3,000	5.8 U	1.4 U	19	1.4 U	1.5 U
P,P'-DDE	NA	-	2,400	19,000	42,000	3.8 U	26	3,300	200	3 U
P,P'-DDE	NA	-	1,700	13,000	130,000	3.2 U	4.6	630	26	3 U
P,P'-DDT	NA	-	1,700	13,000	80,000	29 U	61	5,200	180	3 U
W-B-1242	NA	-	200	1,300	1,000	29 U	28 U	26 U	27 U	30 U
W-B-1254	NA	-	970	18,000	1,000	120	28 U	26 U	27 U	30 U
W-B-1260	NA	-	200	1,300	1,000	2,000	84	26 U	1,100	30 U

Key at the end of the table.

Table 3-11

**FAA HANGAR FACILITY  
SURFACE SOIL SAMPLES ANALYTICAL RESULTS SUMMARY  
ANNETTE ISLAND, ALASKA**

START Sample ID	Background	MIC Soil Cleanup Levels	EPA Region 9 Residential Soil PRG	EPA Region 9 Industrial Soil PRG	Alaska Soil Cleanup Levels*	HB03SS 98234390 Boiler Building	HB04SS 98234391 Boiler Building	HB05SS 98234367 Boiler Building	HC01SS 98234396 Concrete Foundation	HC02SS 98234397 Concrete Foundation	HD01SS 98234400 Mo-gas Station
Sample Location											
<b>VOCs (µg/kg)</b>											
1,2,4-Trichlorobenzene	NA		480,000	1,700,000	1,700	51 U	57.3 JH	53 U	9.9 U	8 U	4.4 U
Benzene, 1,2,4-trimethyl-	NA		51,000	170,000		2.6 U	4.1 JH	2.6 U	4.9 U	4 U	2.2 U
Isopropyltoluene	NA					2.6 U	5.5 JH	2.6 U	4.9 U	5.4	2.2 U
<b>SVOCs (µg/kg)</b>											
1,2,4-Trichlorobenzene	NA		480,000	1,700,000	1,700	158 U	268	166 U	155 U	225 U	136 U
4-Methylphenol	NA		270,000	5,300,000		158 U	144 U	166 U	155 U	509	136 U
Anthracene	NA		14,000,000	270,000,000	3,900,000	158 U	144 UJK	166 U	155 U	225 U	136 U
Benzofluoranthene	NA		560	3,600	5,500	158 U	196	166 U	155 U	225 U	136 U
Benzo[a]pyrene	NA	100	56	360	2,400	158 U	144 U	166 U	155 U	225 U	136 U
Benzo[k]fluoranthene	NA					316 U	288 U	331 U	311 U	449 U	273 U
Benzo[b]fluoranthene	NA		560	3,600	17,000	158 U	490	166 U	155 U	225 U	136 U
Benzo[k]fluoranthene	NA		5,600	36,000	170,000	158 U	202	166 U	155 U	225 U	136 U
Benzoic acid	NA		100,000,000	100,000,000	350,000	1,580 U	1,440 U	1,670	1,550 U	2,250 U	1,360 U
Bis(2-ethylhexyl) phthalate	NA		32,000	210,000	1,100,000	790 U	719 U	828 U	2,020	1,170	682 U
Chrysene	NA		56,000	360,000	550,000	158 U	424	166 U	155 U	225 U	136 U
Dimethylphthalate	NA		100,000,000	100,000,000	1,200,000	158 U	144 U	166 U	155 U	175 JQ	136 U
Di-n-butylphthalate	NA		5,500,000	110,000,000	15,000,000	158 U	144 UJ	166 U	155 U	225 U	136 U
Fluoranthene	NA	8,000,000	2,000,000	37,000,000	1,900,000	158 U	144 UJ	166 U	155 U	225 U	136 U
Indeno[1,2,3-cd]pyrene	NA		560	3,600	50,000	158 U	356	166 U	155 U	225 U	136 U
Isophthalone	NA		470,000	3,200,000	2,600	364	144 U	166 U	155 U	225 U	136 U
Naphthalene	NA	30,000	55,000	190,000	38,000	158 U	144 U	166 U	155 U	188 JQ	136 U
Naphthalene, 1-methyl-	NA					158 U	144 U	166 U	155 U	125 JQ	136 U
Naphthalene, 2-methyl-	NA					43.2 JQ	144 U	166 U	144 JQ	313	75.1 JQ
Phenanthrene	NA					133 JQ	144 UJ	166 U	155 U	163 JQ	136 U
Pyrene	NA		1,500,000	26,000,000	1,400,000	59.4 JQ	485	166 U	285	95.6 JQ	136 U
Retene	NA					297	144 U	166 U	655	254	136 U
<b>Alaska Methods (mg/kg)</b>											
Toluene	NA	880	520	520	4.8	0.053 U	0.046 U	0.05 U	0.048 U	0.064 U	0.064
m,p-Xylenes	NA	320	210	210	69	0.11 U	0.092 U	0.1 U	0.095 U	0.13 U	0.11
p-Xylene	NA	320	280	280	69	0.053 U	0.046 U	0.05 U	0.048 U	0.064 U	0.045 U
CRE	NA				260	2.6 U	2.3 U	2.3 U	3.5	3.2 U	2.2 U
DRO (nC10-<nC25)	NA				230	230	21,000	170	3,700	880	140
RR0 (nC25->nC36)	NA				9,700	560	1,700	410	2,200	1,500	680

Key at the end of the table.

Table 3-11

FAA HANGAR FACILITY  
SURFACE SOIL SAMPLES ANALYTICAL RESULTS SUMMARY  
ANNETTE ISLAND, ALASKA

START Sample ID	Background	MIC Soil Cleanup Levels	EPA Region 9 Residential Soil PRG	EPA Region 9 Industrial Soil PRG	Alaska Soil Cleanup Levels*	HB03SS Boiler Building	HB04SS Boiler Building	HB05SS Boiler Building	HC01SS Foundation	HC02SS Foundation	HH01SS Mo-gas Station
Sample Location											
<b>Inorganics (mg/kg)</b>											
Aluminum	28,200	-	75,000	100,000	-	17,500	7,110	6,390	NA	NA	9,860
Arsenic	5.07	-	0.38	3	1.8	27.5	5	2.69	NA	NA	4.09
Barium	79.2	-	5,200	100,000	982	72.3	31.6	54.1	NA	NA	41.2
Beryllium	0.38	-	150	3,400	38	0.46	0.22	0.17	NA	NA	0.27
Cadmium	0.2 U	-	37	930	4.5	2.23	0.45 U	2.2	NA	NA	0.94 U
Calcium	1740	-	-	-	-	5,910	3,200	2,660	NA	NA	2,390
Chromium	18.9	-	210	450	23	174	25.4	46	NA	NA	81.3
Cobalt	12.6	-	3,300	29,000	-	45	16.6	18	NA	NA	46.1
Copper	108	-	2,800	70,000	-	329	28.5	76.9	NA	NA	30.2
Iron	30,400	-	22,000	100,000	-	150,000	17,600	22,900	NA	NA	31,700
Lead	2.95	1,000	400	1,000	400	364	20.4	253 U	NA	NA	93.8
Magnesium	10,400	-	-	-	-	51,900	26,400	28,500	NA	NA	82,200
Manganese	272	-	3,100	45,000	-	1,070	247	286	NA	NA	519
Mercury	0.0578	-	22	560	1	0.352	0.02 U	1.25	NA	NA	0.0208
Nickel	9.21	-	1,500	37,000	78	251	100	114	NA	NA	358
Potassium	3,040	-	-	-	-	331	964	878	NA	NA	775
Selenium	0.82	-	370	9,400	3	1.8	0.75 U	0.3 U	NA	NA	0.75 U
Sodium	249	-	-	-	-	150	314	159	NA	NA	281
Vanadium	96.2	-	520	13,000	3,050	23.9	22.7	17.5	NA	NA	24.6
Zinc	39.8	-	22,000	100,000	8,100	3,010	93.5	893	NA	NA	102
<b>Pest/PCBs (ppb)</b>											
Gamma-Chlordane	NA	-	1,600	12,000	3,000	1.6 U	18 U	1.7 U	1.6 U	5.3 U	1.4 U
P,P'-DDD	NA	-	2,400	19,000	42,000	4.6	22 U	22	6.7 U	4.5 U	2.7 U
P,P'-DDE	NA	-	1,700	13,000	130,000	3.2 U	5.3 U	3.3 U	3.1 U	4.5 U	2.7 U
P,P'-DIT	NA	-	1,700	13,000	80,000	15	90 U	25 U	3.1 U	4.5 U	2.7 U
P,P'-1242	NA	-	200	1,300	1,000	32 U	29 U	33 U	79	200	27 U
P,P'-1254	NA	-	970	18,000	1,000	32 U	240	33 U	46	90	27 U
P,P'-1260	NA	-	200	1,300	1,000	220	12,000	1,300	42	45 U	27 U

Key at the end of the table

Table 3-11

**FAA HANGAR FACILITY  
SURFACE SOIL SAMPLES ANALYTICAL RESULTS SUMMARY  
ANNETTE ISLAND, ALASKA**

START Sample ID	BC01SS 98234373 Background	MIC Soil Cleanup Levels	EPA Region 9 Residential Soil PRG	EPA Region 9 Industrial Soil PRG	Alaska Soil Cleanup Levels*	HE01SS 98234402 Building Southeast of	HG01SS 98234404 Terminal Building	HF01SS 98234350 Air Traffic Control Tower	HF02SS 98234351 Air Traffic Control Tower	HF03SS 98234352 Air Traffic Control Tower	HF04SS 98234353 Air Traffic Control Tower
Sample Location											
<b>VOCs (µg/kg)</b>											
1,2,4-Trichlorobenzene	NA	-	480,000	1,700,000	1,700	NA	NA	NA	NA	NA	NA
Benzene, 1,2,4-trimethyl-	NA	-	51,000	170,000	-	NA	NA	NA	NA	NA	NA
n-Propyltoluene	NA	-	-	-	-	NA	NA	NA	NA	NA	NA
<b>SVOCs (µg/kg)</b>											
1,2,4-Trichlorobenzene	NA	-	480,000	1,700,000	1,700	NA	NA	NA	NA	NA	NA
4-Methylphenol	NA	-	270,000	530,000	-	NA	NA	NA	NA	NA	NA
Anthracene	NA	-	14,000,000	220,000,000	3,900,000	NA	NA	NA	NA	NA	NA
Benzo(a)anthracene	NA	-	560	3,600	5,500	NA	NA	NA	NA	NA	NA
Benzo(a)pyrene	NA	100	56	360	2,400	NA	NA	NA	NA	NA	NA
Benzo(g,h,i)perylene	NA	-	-	-	-	NA	NA	NA	NA	NA	NA
Benzo(b)fluoranthene	NA	-	560	3,600	17,000	NA	NA	NA	NA	NA	NA
Benzo(k)fluoranthene	NA	-	5,600	36,000	170,000	NA	NA	NA	NA	NA	NA
Benzoic acid	NA	-	100,000,000	100,000,000	350,000	NA	NA	NA	NA	NA	NA
Bis(2-ethylhexyl) phthalate	NA	-	32,000	210,000	1,100,000	NA	NA	NA	NA	NA	NA
Chrysene	NA	-	56,000	360,000	550,000	NA	NA	NA	NA	NA	NA
Dimethylphthalate	NA	-	100,000,000	1,000,000,000	1,200,000	NA	NA	NA	NA	NA	NA
Di-n-Butylphthalate	NA	-	5,500,000	110,000,000	15,000,000	NA	NA	NA	NA	NA	NA
Fluoranthene	NA	8,000,000	2,000,000	37,000,000	1,900,000	NA	NA	NA	NA	NA	NA
Indeno(1,2,3-cd)pyrene	NA	-	560	3,600	50,000	NA	NA	NA	NA	NA	NA
Isophthalene	NA	-	470,000	3,200,000	2,600	NA	NA	NA	NA	NA	NA
Naphthalene	NA	30,000	55,000	190,000	38,000	NA	NA	NA	NA	NA	NA
Naphthalene, 1-methyl-	NA	-	-	-	-	NA	NA	NA	NA	NA	NA
Naphthalene, 2-methyl-	NA	-	-	-	-	NA	NA	NA	NA	NA	NA
Phenanthrene	NA	-	-	-	-	NA	NA	NA	NA	NA	NA
Pyrene	NA	-	1,500,000	26,000,000	1,400,000	NA	NA	NA	NA	NA	NA
Retene	NA	-	-	-	-	NA	NA	NA	NA	NA	NA
<b>Alaska Methods (mg/kg)</b>											
Toluene	NA	880	520	520	4.8	0.046 U	260 U	0.043 U	0.085 U	NA	NA
m,p-Xylenes	NA	320	210	210	69	0.046 U	530 U	0.086 U	0.17 U	NA	NA
p-Xylene	NA	320	280	280	69	0.046 U	260 U	0.043 U	0.085 U	NA	NA
CRO	NA	-	-	-	260	2.3 U	13,000 J	2.1 U	4.2 U	NA	NA
DRO (nC10 <nC25)	NA	-	-	-	230	300	83,000	97	1,700	NA	NA
RRO (nC25 <nC36)	NA	-	-	-	9,700	750	7,100	490	2,400	NA	NA

Key at the end of the table.

Table 3-11

FAA HANGAR FACILITY  
SURFACE SOIL SAMPLES ANALYTICAL RESULTS SUMMARY  
ANNETTE ISLAND, ALASKA

START Sample ID	BC01SS 98234373 Background	MIC Soil Cleanup Levels	EPA Region 9 Residential Soil PRG	EPA Region 9 Industrial Soil PRG	Alaska Soil Cleanup Levels*	HE01SS 98234402 Building Southeast of	HG01SS 98234404 Terminal Building	HF01SS 98234350 Air Traffic Control Tower	HF02SS 98234351 Air Traffic Control Tower	HF03SS 98234352 Air Traffic Control Tower	HF04SS 98234353 Air Traffic Control Tower
Sample Location	Background										
Iron/Pb (mg/kg)											
Aluminum	28,200	-	75,000	100,000	-	NA	NA	5,590	7,770	3,870	2,990
Arsenic	5.07	-	0.38	3	1.8	NA	NA	5.52	1.3	3.66	3.11
Barium	79.2	-	5,200	100,000	982	NA	NA	57.8	37.5	27.7	21.9
Beryllium	0.18	-	150	3,400	38	NA	NA	0.16	0.14	0.11	0.11
Cadmium	0.211	-	37	930	4.5	NA	NA	2.52	1.511	1.9611	4.19
Calcium	1,740	-	-	-	-	NA	NA	2,250	1,980	1,510	926
Chromium	18.9	-	210	450	23	NA	NA	217	109	59.9	103
Cobalt	12.6	-	3,300	29,000	-	NA	NA	52.2	67.3	59.8	81.3
Copper	108	-	2,800	70,000	-	NA	NA	101	47.6	70.6	90.6
Iron	30,400	-	22,000	100,000	-	NA	NA	39,200	42,100	38,700	49,700
Lead	2.95	1,000	400	1,000	400	NA	NA	2,120	169 J	209 J	302 J
Magnesium	10,400	-	-	-	-	NA	NA	109,000	135,000	118,000	168,000
Manganese	272	-	3,100	45,000	-	NA	NA	599	721	633	800
Mercury	0.0578	-	22	560	1	NA	NA	0.912	0.049	0.135	0.12
Nickel	9.21	-	1,500	37,000	78	NA	NA	502	580	484	729
Potassium	3,040	-	-	-	-	NA	NA	568	429	368	170
Selenium	0.82	-	370	9,400	3	NA	NA	0.75 U	0.75 U	0.3 U	0.3 U
Sodium	249	-	-	-	-	NA	NA	129	106	94.2	68.8
Vanadium	96.2	-	520	13,000	3,050	NA	NA	17.8	19.1	13	6.02
Zinc	39.8	-	22,000	100,000	8,100	NA	NA	698	1,250	382	560
Pest/PCBs (µg/kg)											
Gamma Chloridane	NA	-	1,600	12,000	3,000	1.3 U	1.9 U	1.4 U	1.4 U	1.4 U	1.3 U
P,P'-DDE	NA	-	2,400	19,000	42,000	2.3 U	3.8 U	2.9 U	2.7 U	2.9 U	2.7 U
P,P'-DDD	NA	-	1,700	13,000	130,000	2.3 U	3.8 U	2.9 U	2.7 U	2.9 U	2.8 U
P,P'-DDT	NA	-	1,700	13,000	80,000	2.3 U	3.8 U	1.3	2.7 U	2.9 U	4.4 U
PCB-1242	NA	-	200	1,300	1,000	25 U	38 U	29 U	27 U	29 U	27 U
PCB-1254	NA	-	970	18,000	1,000	25 U	38 U	29 U	27 U	29 U	30
PCB-1260	NA	-	200	1,300	1,000	25 U	38 U	120	47	37	212

Key at the end of the table

Table 3-11

**FAA HANGAR FACILITY  
SURFACE SOIL SAMPLES ANALYTICAL RESULTS SUMMARY  
ANNETTE ISLAND, ALASKA**

START Sample ID	BC01SS 98214373	MIC Soil Cleanup Levels	EPA Region 9 Residential Soil PRG	EPA Region 9 Industrial Soil PRG	Alaska Soil (Cleanup Levels)	HH01SS 98214356 Warehouse Building	HH02SS 98214357 Warehouse Building
Sample Location	Background						
<b>VOCs (µg/kg)</b>							
1,2,4-Trichlorobenzene	NA	-	480,000	1,700,000	1,700	42 U	54 U
Benzene, 1,2,4-trimethyl-	NA	-	51,000	170,000	-	21 U	27 U
p-Isopropyltoluene	NA	-	-	-	-	21 U	27 U
<b>SVOCs (µg/kg)</b>							
1,2,4-Trichlorobenzene	NA	-	480,000	1,700,000	1,700	129 U	143 U
4-Methylphenol	NA	-	270,000	5,300,000	-	129 U	143 U
Aniline	NA	-	14,000,000	220,000,000	3,900,000	41 JQ	143 U
Benzotriazinone	NA	-	560	3,600	5,500	129 U	143 U
Benzofuran	NA	100	56	360	2,400	113 JQ	143 U
Benzofuran, 2-methyl-	NA	-	-	-	-	108 JQ	286 U
Benzofuran, 2-methyl-, 2-ethyl-	NA	-	560	3,600	17,000	172	143 U
Benzofuran, 2-methyl-, 2-ethyl-, 2-propyl-	NA	-	5,600	36,000	170,000	63.5 JQ	143 U
Benzofuran, 2-methyl-, 2-ethyl-, 2-propyl-, 2-butyl-	NA	-	100,000,000	100,000,000	350,000	1,290 U	1,430 U
Benzofuran, 2-methyl-, 2-ethyl-, 2-propyl-, 2-butyl-, 2-pentyl-	NA	-	32,000	210,000	1,100,000	1,140	772
Chrysene	NA	-	56,000	360,000	550,000	113 JQ	143 U
Dimethylphthalate	NA	-	100,000,000	100,000,000	1,200,000	129 U	143 U
Di-n-butylphthalate	NA	-	5,500,000	110,000,000	15,000,000	130 U	143 U
Fluoranthene	NA	8,000,000	2,000,000	37,000,000	1,900,000	186	143 U
Indeno(1,2,3-cd)pyrene	NA	-	560	3,600	50,000	268	143 U
Isophorone	NA	-	470,000	3,200,000	2,600	129 U	143 U
Naphthalene	NA	30,000	55,000	190,000	38,000	129 U	143 U
Naphthalene, 1-methyl-	NA	-	-	-	-	129 U	143 U
Naphthalene, 2-methyl-	NA	-	-	-	-	129 U	143 U
Phenanthrene	NA	-	-	-	-	156	143 U
Pyrene	NA	-	1,500,000	26,000,000	1,400,000	168	143 U
Retene	NA	-	-	-	-	129 U	143 U
<b>Alaska Methods (mg/kg)</b>							
Toluene	NA	880	520	520	48	0.041 U	0.049 U
m,p-Xylenes	NA	320	210	210	69	0.082 U	0.099 U
o-Xylene	NA	320	280	280	69	0.12	0.049 U
GRO	NA	-	-	-	260	2.1 U	2.5 U
DRO (nC10-nC25)	NA	-	-	-	230	140	230
GRO (nC25-nC36)	NA	-	-	-	9,700	550	1,000

Key at the end of the table.

Table 3-11

**FAA HANGAR FACILITY  
SURFACE SOIL SAMPLES ANALYTICAL RESULTS SUMMARY  
ANNETTE ISLAND, ALASKA**

START Sample ID	ICR01SS 98234373 Background	MIC Soil Cleanup Levels	EPA Region 9 Residential Soil PRG	EPA Region 9 Industrial Soil PRG	Alaska Soil Cleanup Levels*	IIH01SS 98234356 Warehouse Building	IIH02SS 98234357 Warehouse Building
Sample Location	Background						
<b>Inorganics (mg/kg)</b>							
Aluminum	28,200	-	75,000	100,000	-	8,580	8,950
Arsenic	5.07	-	0.38	3	1.8	15	7.33
Barium	79.2	-	5,200	100,000	982	49.5	43.2
Beryllium	0.38	-	150	3,400	38	0.25	0.2
Cadmium	0.2 U	-	37	930	4.5	3.48	3.86
Calcium	1,740	-	-	-	-	3,230	2,740
Chromium	18.9	-	210	450	23	80.4	119
Cobalt	12.6	-	3,300	29,000	-	26.5	53.2
Copper	108	-	2,800	70,000	-	75.4	43.2
Iron	30,400	-	22,000	100,000	-	31,800	40,500
Lead	2.95	1,000	400	1,000	400	311 J	316 J
Magnesium	10,400	-	-	-	-	55,400	106,000
Manganese	272	-	3,100	45,000	-	355	622
Mercury	0.0578	-	22	560	1	0.801	0.127
Nickel	9.21	-	1,500	37,000	78	219	452
Potassium	3,040	-	-	-	-	851	599
Selenium	0.82	-	370	9,400	3	0.3 U	0.3 U
Sodium	249	-	-	-	-	210	188
Vanadium	96.2	-	520	13,000	3,050	40.3	22.4
Zinc	39.8	-	22,000	100,000	8,100	499	585
<b>Pest/PCBs (µg/kg)</b>							
Gamma-Chlordane	NA	-	1,600	12,000	3,000	1.3 U	32 U
P,P'-DDE	NA	-	2,400	19,000	42,000	7.4	11 U
P,P'-DDE	NA	-	1,700	13,000	130,000	2.6 U	17 U
P,P'-DDT	NA	-	1,700	13,000	80,000	57	280 U
PCB-1242	NA	-	200	1,300	1,000	26 U	29 U
PCB-1254	NA	-	970	18,000	1,000	66	200
PCB-1260	NA	-	200	1,300	1,000	270	22,000

Key at the end of the table.

The most conservative applicable level was used. In this case, the migration to groundwater standard in the over 40 inch rainfall zone.

Note: Bold type indicates concentrations above sample quantitation limits or detection limits.

Underline indicates concentrations above a comparison standard.

Key:

DDD = Dichlorodiphenyldichloroethane.

DDE = Dichlorodiphenyldichloroethylene.

DDT = Dichlorodiphenyltrichloroethane.

DRO = Diesel range organics.

EPA = Environmental Protection Agency.

FAA = Federal Aviation Administration.

H = High bias.

J = The analyte was positively identified. The associated numerical result is an estimate.

K = Unknown bias.

L = Low bias.

mg/kg = Milligrams per kilogram.

MIC = Metlakatla Indian Community.

NA = Not analyzed.

Pes/PCBs = Pesticides and polychlorinated biphenyls.

PRG = Preliminary remedial goal.

Q = The result is estimated because it is below the Contract Required Detection Limit.

RRO = Residual range organics.

START = Superfund Technical Assessment and Response Team (EPA).

SVOCs = Semivolatile organic compounds.

U = The material was analyzed for but was not detected. The associated numerical value is the sample quantitation limit.

µg/kg = Micrograms per kilogram.

VOCs = Volatile organic compounds.

Table 3-12

**FAA HANGAR FACILITY  
SUBSURFACE SOIL SAMPLES ANALYTICAL RESULTS SUMMARY  
ANNETTE ISLAND, ALASKA**

START Sample ID	Background	MIC Soil Cleanup Levels	EPA Region 9 Residential Soil PRG	EPA Region 9 Industrial Soil PRG	Alaska Soil Cleanup Levels*	HA01SB 98234384	HA02SB 98234385	HA03SB 98234386	H1B01SB 98234392	H1B02SB 98234393	H1B03SB 98234394	H1B04SB 98234395
Sample Location	Background	MIC Soil Cleanup Levels	EPA Region 9 Residential Soil PRG	EPA Region 9 Industrial Soil PRG	Alaska Soil Cleanup Levels*	HA01SB 98234384	HA02SB 98234385	HA03SB 98234386	H1B01SB 98234392	H1B02SB 98234393	H1B03SB 98234394	H1B04SB 98234395
VOCs (µg/kg)	Background	MIC Soil Cleanup Levels	EPA Region 9 Residential Soil PRG	EPA Region 9 Industrial Soil PRG	Alaska Soil Cleanup Levels*	HA01SB 98234384	HA02SB 98234385	HA03SB 98234386	H1B01SB 98234392	H1B02SB 98234393	H1B03SB 98234394	H1B04SB 98234395
2-Butanone	NA	-	-	-	-	NA	NA	NA	26.6 UJK	55.7 UJK	26.6 UJK	38.4 UJK
Acetone	NA	-	1,400,000	6,100,000	9,000	NA	NA	NA	107 UJK	223 UJK	106.6 UJK	154 R
Benzene	NA	1,400	620	1,400	20	NA	NA	NA	2.7 U	5.6 U	2.7 U	3.8 UJK
Benzene, 1,2,4-trimethyl-	NA	-	51,000	170,000	-	NA	NA	NA	2.7 U	496 J	2.7 UJK	3.8 UJK
Benzene, 1,3,5-trimethyl-	NA	-	21,000	70,000	-	NA	NA	NA	2.7 U	365	2.7 UJK	3.8 UJK
Ethylbenzene	NA	230,000	230,000	230,000	5,000	NA	NA	NA	2.7 U	5.6 U	2.7 U	3.8 UJK
Isopropylbenzene	NA	-	120,000	490,000	-	NA	NA	NA	2.7 U	5.6 U	2.7 UJK	3.8 UJK
m,p-Xylene	NA	320,000	210,000	210,000	69,000	NA	NA	NA	2.7 U	16.5	2.7 U	3.8 UJK
Naphthalene	NA	30,000	55,000	190,000	38,000	NA	NA	NA	5.3 UJK	332 JI	5.3 UJK	7.7 UJK
n-Butylbenzene	NA	-	130,000	550,000	-	NA	NA	NA	2.7 U	316	2.7 UJK	3.8 UJK
n-Propylbenzene	NA	-	130,000	550,000	-	NA	NA	NA	2.7 U	5.6 U	2.7 UJK	3.8 UJK
p-Xylene	NA	320,000	280,000	280,000	69,000	NA	NA	NA	2.7 U	10.9	2.7 U	3.8 UJK
p-Isopropyltoluene	NA	-	-	-	-	NA	NA	NA	2.7 U	83.2	2.7 UJK	3.8 UJK
sec-Butylbenzene	NA	-	100,000	410,000	-	NA	NA	NA	2.7 U	5.6 U	2.7 UJK	3.8 UJK
Toluene	NA	880,000	520,000	520,000	4,800	NA	NA	NA	2.7 U	5.6 U	2.7 U	3.8 UJK
<b>SVOCs (µg/kg)</b>												
4-Methylphenol	NA	-	270,000	530,000	-	NA	NA	NA	150 U	148 U	156 U	204 U
9H-Fluorene	NA	-	1,800,000	22,000,000	240,000	NA	NA	NA	150 U	9,590 J	156 U	204 U
Anthracene	NA	-	14,000,000	220,000,000	3,900,000	NA	NA	NA	150 U	148 U	156 U	204 U
Benzoic acid	NA	-	100,000,000	100,000,000	3,500,000	NA	NA	NA	1,500 U	1,480 U	1,560 U	1,910 JQ
Bis(2-ethylhexyl) phthalate	NA	-	32,000	210,000	1,100,000	NA	NA	NA	751 U	742 U	781 U	1020 U
Benzofuran	NA	-	210,000	3,200,000	-	NA	NA	NA	150 U	148 U	156 U	204 U
Di-n-Butylphthalate	NA	-	5,500,000	110,000,000	1,500,000	NA	NA	NA	150 U	148 U	156 U	204 U
Fluoranthene	NA	8,000,000	2,000,000	37,000,000	1,900,000	NA	NA	NA	150 U	148 U	156 U	204 U
Isophorone	NA	-	470,000	3,200,000	2,600	NA	NA	NA	150 U	148 U	156 U	204 U
Naphthalene	NA	30,000	55,000	190,000	38,000	NA	NA	NA	150 U	148 U	156 U	204 U
Naphthalene, 1-methyl-	NA	-	-	-	-	NA	NA	NA	150 U	148 U	156 U	204 U
Naphthalene, 2-methyl-	NA	-	-	-	-	NA	NA	NA	150 U	22,300 J	156 U	204 U
Phenanthrene	NA	-	-	-	-	NA	NA	NA	150 U	18,100 J	63.7 JQ	204 U
Pyrene	NA	-	1,500,000	26,000,000	1,400,000	NA	NA	NA	150 U	7,350 J	354	204 U
Retene	NA	-	-	-	-	NA	NA	NA	44.3 JQ	148 U	156 U	204 U
<b>Alaska Methods (mg/kg)</b>												
Toluene	NA	880	520	520	4.8	NA	NA	NA	0.049 U	0.029 U	0.047 U	0.056 U
Ethylbenzene	NA	230	230	230	5	NA	NA	NA	0.049 U	0.042	0.047 U	0.056 U
m,p-Xylenes	NA	320	210	210	69	NA	NA	NA	0.098 U	0.098	0.094 U	0.11 U
o,p-Xylene	NA	320	280	280	69	NA	NA	NA	0.049 U	0.029 U	0.047 U	0.056 U
GRO	NA	-	-	-	260	NA	NA	NA	2.4 U	8.1	2.3 U	2.8 U
DRO (nC10-nC25)	NA	-	-	-	230	NA	NA	NA	45	15,000	530	3,200
BRO (nC25-nC36)	NA	-	-	-	9,700	NA	NA	NA	140	520	380	3,800

Key at the end of the table

Table 3-12

FAA HANGAR FACILITY  
SUBSURFACE SOIL SAMPLES ANALYTICAL RESULTS SUMMARY  
ANNETTE ISLAND, ALASKA

START Sample ID	Background	MIC Soil Cleanup Levels	EPA Region 9 Residential Soil PRG	EPA Region 9 Industrial Soil PRG	Alaska Soil Cleanup Levels*	HA01SB	HA02SB	HA03SB	HB01SB	HB02SB	HB03SB	HB04SB
EPA Sample ID	98234374					98234384	98234385	98234386	98234392	98234393	98234394	98234395
Sample Location	Background					Hangar Building	Hangar Building	Hangar Building	Boiler Building	Boiler Building	Boiler Building	Boiler Building
Organics (mg/kg)												
Aluminum	25,100	-	75,000	100,000	-	12,500	5,880	9,770	5,350	6,980	8,030	13,400
Arsenic	2.6	-	0.38	3	1.8	2.46	1.5	0.3	1.4	0.93	20.7	1.1
Barium	62.2	-	5,200	100,000	982	74.1	37.9	41.5	35.7	22.8	68.2	40.7
Beryllium	0.4	-	150	3,400	38	0.31	0.15	0.19	0.19	0.18	0.21	0.24
Cadmium	0.2 U	-	37	930	4.5	0.71 U	2.2	0.2 U	0.42	0.38 U	1.81 U	0.2 U
Calcium	1,590	-	-	-	-	3,450	8,270	3,900	7,600	2,508	3,900	1,070
Chromium	12.6	-	210	450	23	54.3	39.8	129	11.1	161	213	11
Cobalt	12.7	-	3,300	29,000	-	36.5	17.6	77.1	5.02	78.6	52.9	5.8
Copper	89.8	-	2,800	70,000	-	44.9	14.2	14.4	12.3	18.8	491	9.19
Iron	27,800	-	22,000	100,000	-	30,900	14,900	42,600	8,820	41,800	200,000	12,900
Lead	3.01	1,000	400	1,000	400	45.5	24.8	7.3	5.8	35.2	188	18.6
Magnesium	8,880	-	-	-	-	61,200	30,300	143,000	6,070	142,000	70,900	9,630
Manganese	351	-	3,100	45,000	-	505	228	802	123	669	856	154
Mercury	0.0673	-	22	560	1.24	0.0272	0.02 U	0.02 U	0.02 U	0.0495	0.264	0.0572
Nickel	7.41	-	1,500	37,000	78	260	148	619	29.1	641	333	30.9
Potassium	2,230	-	-	-	-	2,100	677	377	702	219	330	1,030
Selenium	0.75 U	-	370	9,400	3	0.75 U	0.3 U	0.3 U	0.19	0.75 U	2.6	1.1
Sodium	242	-	-	-	-	227	226	149	230	119	165	113
Vanadium	91.4	-	520	13,000	3,050	32.2	15.4	16	17.4	11.3	9.89 U	31.6
Zinc	33.5	-	22,000	100,000	8,100	374	45.8	42	33.6	67.9	1,340	31.1
Pest/PCBs (µg/kg)												
P,P'-DDD	NA	-	2,400	19,000	42,000	4.8 U	4.3	2.9 U	73	3 U	3.1 U	4.1 U
P,P'-DDE	NA	-	1,700	13,000	80,000	25 U	51	2.9 U	3 U	3 U	11	4.1 U
PCB-1242	NA	-	200	1,300	1,000	28 U	28 U	29 U	30 U	30 U	31 U	41 U
PCB-1254	NA	-	970	18,000	1,000	28 U	28 U	29 U	30 U	30 U	31 U	41 U
PCB-1260	NA	-	200	1,300	1,000	1,900 U	28 U	29 U	30 U	30 U	140	200

Key at the end of the table

Table 3-12

**FAA HANGAR FACILITY  
SUBSURFACE SOIL SAMPLES ANALYTICAL RESULTS SUMMARY  
ANNETTE ISLAND, ALASKA**

STAR1 Sample ID	DC01SB 98234374	MIC Soil Cleanup Levels	EPA Region 9 Residential Soil PRG	EPA Region 9 Industrial Soil PRG	Alaska Soil Cleanup Levels*	HB05SB 98234368	HC01SB 98234398 Concrete Foundation Southwest of Hangar	HC02SB 98234399 Concrete Foundation Southwest of Hangar	HD01SB 98234401	HE01SB 98234403 Building Southeast of Hangar	HC01SB 98234405	HC02SB 98234403	HC03SB 98234405	HC04SB 98234405
Sample Location	Background					Boiler Building			Mo-gas Station	Building Southeast of Hangar	Terminal Building			Av Traffic Control Tower
VOCS (µg/kg)														
2-Butanone	NA	-	-	-	-	23.2 UJK	46.2 UJK	65.8 UJK	29.6 UJK	NA	NA	NA	NA	NA
Acetone	NA	-	1,400,000	6,100,000	9,000	92.8 UJK	185 UJK	2,280 JH	118 UJK	NA	NA	NA	NA	NA
Benzene	NA	1,400	620	1,400	20	2.3 U	4.6 U	13.5	3 U	NA	NA	NA	NA	NA
Benzene, 1,2,4-trimethyl-	NA	-	51,000	170,000	-	2.3 U	33,800	4,440	3 U	NA	NA	NA	NA	NA
Benzene, 1,3,5-trimethyl-	NA	-	21,000	70,000	-	2.3 U	16,200	1,590	3 U	NA	NA	NA	NA	NA
Ethylbenzene	NA	230,000	230,000	230,000	5,000	2.3 U	4.6 U	13,700	3 U	NA	NA	NA	NA	NA
Isopropylbenzene	NA	-	120,000	490,000	-	2.3 U	63.8	247	3 U	NA	NA	NA	NA	NA
m,p-Xylene	NA	320,000	210,000	210,000	69,000	2.3 U	2,680	56,400	3 U	NA	NA	NA	NA	NA
Naphthalene	NA	30,000	55,000	190,000	38,000	4.6 UJK	65.2 JH	1,680 JH	5.9 UJK	NA	NA	NA	NA	NA
n-Butylbenzene	NA	-	130,000	550,000	-	2.3 U	6,880	690	3 U	NA	NA	NA	NA	NA
n-Propylbenzene	NA	-	130,000	550,000	-	2.3 U	69.2	466 J	3 U	NA	NA	NA	NA	NA
o-Xylene	NA	320,000	280,000	280,000	69,000	2.3 U	1,780	10,500	3 U	NA	NA	NA	NA	NA
p-Isopropyltoluene	NA	-	-	-	-	2.3 U	3,400	591	3 U	NA	NA	NA	NA	NA
sec-Butylbenzene	NA	-	100,000	410,000	-	2.3 U	1,230	120	3 U	NA	NA	NA	NA	NA
Toluene	NA	880,000	520,000	520,000	4,800	2.3 U	9	331	3 U	NA	NA	NA	NA	NA
SVOCs (µg/kg)														
4-Methylphenol	NA	-	270,000	530,000	-	147 U	140 U	380	140 U	NA	NA	NA	NA	136 U
9H-Fluorene	NA	-	1,800,000	22,000,000	240,000	147 U	4,660 J	108 JQ	140 U	NA	NA	NA	NA	136 U
Anthracene	NA	-	14,000,000	220,000,000	3,900,000	147 U	140 UJ	43.6 JQ	140 U	NA	NA	NA	NA	136 U
Benzoic acid	NA	-	100,000,000	100,000,000	350,000	1,470 U	1,400 U	1,760 U	1,400 U	NA	NA	NA	NA	1,360 U
Bis(2-ethylhexyl) phthalate	NA	-	32,000	210,000	1,100,000	734 U	1,330 JH	826 JQ	699 U	NA	NA	NA	NA	596 JQ
Dibenzofuran	NA	-	210,000	3,200,000	-	147 U	1,680 J	176 U	140 U	NA	NA	NA	NA	136 U
D,n-Butylphthalate	NA	-	5,500,000	110,000,000	1,500,000	1,070	140 UJ	176 U	140 U	NA	NA	NA	NA	136 U
Fluoranthene	NA	8,000,000	2,000,000	37,000,000	1,900,000	147 U	140 UJ	114 JQ	140 U	NA	NA	NA	NA	136 U
Isophthalate	NA	-	470,000	3,200,000	2,600	147 U	140 U	176 U	140 U	NA	NA	NA	NA	136 U
Naphthalene	NA	30,000	55,000	190,000	38,000	147 U	11,300 J	1,440	140 U	NA	NA	NA	NA	136 U
Naphthalene, 1-methyl-	NA	-	-	-	-	147 U	52,600 J	1,630	140 U	NA	NA	NA	NA	136 U
Naphthalene, 2-methyl-	NA	-	-	-	-	147 U	68,300 J	3,580	140 U	NA	NA	NA	NA	136 U
Phenanthrene	NA	-	-	-	-	147 U	6,950 J	281	140 U	NA	NA	NA	NA	136 U
Pyrene	NA	-	1,500,000	26,000,000	1,400,000	147 U	455 J	196	140 U	NA	NA	NA	NA	136 U
Retene	NA	-	-	-	-	147 U	715 J	176 U	140 U	NA	NA	NA	NA	136 U
Alaska Methods (mg/kg)														
Endrin	NA	880	520	520	4.8	0.048 U	0.4	2.9 J	0.052 U	0.028 U	0.24 J	0.025 U	0.025 U	0.025 U
Endrin	NA	230	230	230	5	0.048 U	0.65	14 J	0.052 U	0.028 U	0.27 J	0.025 U	0.025 U	0.025 U
m,p-Xylenes	NA	320	210	210	69	0.096 U	4.2	63 J	0.1 U	0.056 U	0.69 J	0.05 U	0.05 U	0.05 U
o-Xylene	NA	320	280	280	69	0.048 U	0.67	11 J	0.052 U	0.028 U	0.77 J	0.025 U	0.025 U	0.025 U
γ-HCH	NA	-	-	-	260	2.4 U	93	720	8.4	1.4 U	35	1.3 U	1.3 U	1.3 U
DRO (nC10-nC25)	NA	-	-	-	230	21	17,000	700	150	210	9,600	13 U	13 U	13 U
RRO (nC25-nC36)	NA	-	-	-	9,700	39	2,100	3,100	180	910	170	1,000	1,000	1,000

Key at the end of the table

Table 3-12

FAA HANGAR FACILITY  
SUBSURFACE SOIL SAMPLES ANALYTICAL RESULTS SUMMARY  
ANNETTE ISLAND, ALASKA

START Sample ID (EPA Sample ID)	BG01SB 98234374	MIC Soil Cleanup Levels	EPA Region 9 Residential Soil PRG	EPA Region 9 Industrial Soil PRG	Alaska Soil Cleanup Levels*	HB05SB 98234368	HC01SB 98234398 Concrete Foundation Southwest of Hangar	HC02SB 98234399 Concrete Foundation Southwest of Hangar	HD01SB 98234401	HE01SB 98234403 Building Southeast of Hangar	HG01SB 98234405	HF01SB 98234354
Sample Location	Background					Boiler Building			Mo-gas Station		Terminal Building	Air Traffic Control Tower
Heavy Metals (mg/kg)												
Aluminum	25,100	-	75,000	100,000	-	5,940	NA	NA	13,200	NA	NA	8,580
Arsenic	2.6	-	0.38	3	1.8	1.5	NA	NA	1.8	NA	NA	1.7
Barium	62.2	-	5,200	100,000	982	38.7	NA	NA	37.6	NA	NA	49.9
Beryllium	0.4	-	150	3,400	38	0.1 U	NA	NA	0.24	NA	NA	0.15
Cadmium	0.2 U	-	37	930	4.5	0.4 U	NA	NA	0.29 U	NA	NA	1.17 U
Calcium	1,590	-	-	-	-	15,100	NA	NA	3,020	NA	NA	2,540
Chromium	12.6	-	210	450	23	12.7	NA	NA	166	NA	NA	82.6
Cobalt	12.7	-	3,300	29,000	-	5.66	NA	NA	74.9	NA	NA	62.9
Copper	89.8	-	2,800	70,000	-	15.1	NA	NA	29	NA	NA	41.6
Iron	27,800	-	22,000	100,000	-	10,500	NA	NA	45,000	NA	NA	40,300
Lead	3.01	1,000	400	1,000	400	8.73	NA	NA	33.3	NA	NA	110 J
Magnesium	8,880	-	-	-	-	8,060	NA	NA	148,000	NA	NA	126,000
Manganese	351	-	3,100	45,000	-	128	NA	NA	777	NA	NA	654
Mercury	0.0673	-	22	560	1.24	0.035	NA	NA	0.0234	NA	NA	0.131
Nickel	7.41	-	1,500	37,000	78	26.2	NA	NA	594	NA	NA	524
Potassium	2,230	-	-	-	-	877	NA	NA	467	NA	NA	599
Selenium	0.75 U	-	370	9,400	3	0.3 U	NA	NA	0.3 U	NA	NA	0.75 U
Sodium	242	-	-	-	-	331	NA	NA	222	NA	NA	161
Vanadium	91.4	-	520	13,000	3,050	17.7	NA	NA	20.4	NA	NA	17.9
Zinc	33.5	-	22,000	100,000	8,100	44.8	NA	NA	57.3	NA	NA	89.8
Pest/PCBs (ug/kg)												
P,P'-DDE	NA	-	2,400	19,000	42,000	2.9 U	2.8 U	3.5 U	2.8 U	2.7 U	2.9 U	2.9 U
P,P'-DDT	NA	-	1,700	13,000	80,000	2.9 U	2.8 U	3.5 U	2.8 U	2.7 U	2.9 U	2.9 U
PCB-1242	NA	-	200	1,300	1,000	29 U	120	35 U	28 U	27 U	29 U	29 U
PCB-1254	NA	-	970	18,000	1,000	29 U	37	35 U	28 U	27 U	29 U	29 U
PCB-1260	NA	-	200	1,300	1,000	55	28 U	35 U	28 U	27 U	29 U	46

Key at the end of the table

Table 3-12

**FAA HANGAR FACILITY  
SUBSURFACE SOIL SAMPLES ANALYTICAL RESULTS SUMMARY  
ANNETTE ISLAND, ALASKA**

START Sample ID	BC01SB 98234374	MIC Soil Cleanup Levels	EPA Region 9 Residential Soil PRG	EPA Region 9 Industrial Soil PRG	Alaska Soil Cleanup Levels*	HF02SB 98234355	HH01SB 98234358	HH02SB 98234359
Sample Location	Background					Air Traffic Control Tower	Warehouse Building	Warehouse Building
<b>VOCs (µg/kg)</b>								
1,1-Dichloroethane	NA	-	-	-	-	NA	29.8 JL	25.7 U
Acetone	NA	-	1,400,000	6,100,000	9,000	NA	163 UJK	182 UJK
Benzene	NA	1,400	620	1,400	20	NA	2.6 U	2.6 U
Benzene, 1,2,4-trimethyl-	NA	-	51,000	170,000	-	NA	2.6 U	2.6 U
Benzene, 1,3,5-trimethyl-	NA	-	21,000	70,000	-	NA	2.6 U	2.6 U
Ethylbenzene	NA	230,000	230,000	230,000	5,000	NA	2.6 U	2.6 U
Isopropylbenzene	NA	-	120,000	490,000	-	NA	2.6 U	2.6 U
m,p-Xylene	NA	320,000	210,000	210,000	69,000	NA	2.6 U	2.6 U
Naphthalene	NA	30,000	55,000	190,000	38,000	NA	5.2 UJK	5.1 UJK
n-Butylbenzene	NA	-	130,000	550,000	-	NA	2.6 U	2.6 U
n-Propylbenzene	NA	-	130,000	550,000	-	NA	2.6 U	2.6 U
p-Xylene	NA	320,000	280,000	280,000	69,000	NA	2.6 U	2.6 U
p-Isopropyltoluene	NA	-	-	-	-	NA	2.6 U	2.6 U
sec-Butylbenzene	NA	-	100,000	410,000	-	NA	2.6 U	2.6 U
Toluene	NA	880,000	520,000	520,000	4,800	NA	2.6 U	2.6 U
<b>SVOCs (µg/kg)</b>								
4-Methylphenol	NA	-	270,000	530,000	-	NA	136 U	132 U
9H-Fluorene	NA	-	1,800,000	22,000,000	240,000	NA	136 U	132 U
Anthracene	NA	-	14,000,000	220,000,000	3,900,000	NA	136 U	132 U
Benzoic acid	NA	-	100,000,000	100,000,000	350,000	NA	1,360 U	1,320 U
Bis(2-ethylhexyl) phthalate	NA	-	32,000	210,000	1,100,000	NA	596 JQ	660 U
Dibenzofuran	NA	-	210,000	3,200,000	-	NA	136 U	132 U
Di-n-Butylphthalate	NA	-	5,500,000	110,000,000	1,500,000	NA	136 U	132 U
Fluoranthene	NA	8,000,000	2,000,000	37,000,000	1,900,000	NA	136 U	132 U
Isophorone	NA	-	470,000	3,200,000	2,600	NA	136 U	132 U
Naphthalene	NA	30,000	55,000	190,000	38,000	NA	136 U	132 U
Naphthalene, 1-methyl-	NA	-	-	-	-	NA	136 U	132 U
Naphthalene, 2-methyl-	NA	-	-	-	-	NA	136 U	132 U
Phenanthrene	NA	-	-	-	-	NA	136 U	132 U
Pyrene	NA	-	1,500,000	26,000,000	1,400,000	NA	136 U	132 U
Retene	NA	-	-	-	-	NA	136 U	132 U
<b>Alaska Methods (mg/kg)</b>								
Toluene	NA	880	520	520	4.8	0.022 U	0.032 U	0.018 U
Ethylbenzene	NA	230	230	230	5	0.022 U	0.032 U	0.018 U
m,p-Xylenes	NA	320	210	210	69	0.043 U	0.064 U	0.037 U
p-Xylene	NA	320	280	280	69	0.022 U	0.032 U	0.018 U
GRO	NA	-	-	-	260	1.1 J	1.6 U	0.91 U
DRO (nC10-nC25)	NA	-	-	-	230	NA	280	4.7
HRO (nC25-nC36)	NA	-	-	-	9,700	NA	910	18

Key at the end of the table

Table 3-12

**FAA HANGAR FACILITY  
SUBSURFACE SOIL SAMPLES ANALYTICAL RESULTS SUMMARY  
ANNETTE ISLAND, ALASKA**

START Sample ID	BG01SB 98234374	MIC Soil Cleanup Levels	EPA Region 9 Residential Soil PRG	EPA Region 9 Industrial Soil PRG	Alaska Soil Cleanup Levels*	HF02SB 98234355	HH01SB 98234358	HH02SB 98234359
Sample Location	Background					Air Traffic Control Tower	Warehouse Building	Warehouse Building
<b>Inorganics (mg/kg)</b>								
Aluminum	25,100	-	75,000	100,000	-	8,730	6,570	10,400
Arsenic	2.6	-	0.38	3	1.8	5.95	2.4	3.49
Barium	62.2	-	5,200	100,000	982	60.9	35.2	30.4
Beryllium	0.4	-	150	3,400	38	0.25	0.13	0.27
Cadmium	0.2 U	-	37	930	4.5	0.2 U	0.29 U	0.2 U
Calcium	1,590	-	-	-	-	2,960	3,590	3,420
Chromium	12.6	-	210	450	23	12.7	61.7	49.5
Cobalt	12.7	-	3,300	29,000	-	8.16	38.4	18.3
Copper	89.8	-	2,800	70,000	-	30.6	16.2	30.9
Iron	27,800	-	22,000	100,000	-	16,000	25,500	19,500
Lead	3.01	1,000	400	1,000	400	3.43	39.2 J	2.94
Magnesium	8,880	-	-	-	-	5,520	72,600	9,690
Manganese	351	-	3,100	45,000	-	181	404	324
Mercury	0.0673	-	22	560	1.24	0.0775	0.029	0.02 U
Nickel	7.41	-	1,500	37,000	78	15.2	327	35.3
Potassium	2,230	-	-	-	-	924	610	874
Selenium	0.75 U	-	370	9,400	3	0.36	0.3 U	0.3 U
Sodium	242	-	-	-	-	175	172	111
Vanadium	91.4	-	520	13,000	3,050	30.6	16.1	23
Zinc	33.5	-	22,000	100,000	8,100	43.2	56.7	53.7
<b>Pesticides (ug/kg)</b>								
P,P'-DDD	NA	-	2,400	19,000	42,000	2.8 U	2.7 U	2.6 U
P,P'-DDT	NA	-	1,700	13,000	80,000	2.8 U	2.7 U	2.6 U
PCB-1242	NA	-	200	1,300	1,000	28 U	27 U	26 U
PCB-1254	NA	-	970	18,000	1,000	28 U	27 U	26 U
PCB-1260	NA	-	200	1,300	1,000	28 U	38	26 U

Key at the end of the table.

The most conservative applicable level was used. In this case, the migration to groundwater standard in the over 40 inch rainfall zone.

Note: Bold type indicates concentrations above sample quantitation limits or detection limits. Underline indicates concentrations above a comparison standard.

# Key

DDD = Dichlorodiphenyldichloroethane.  
 DDT = Dichlorodiphenyltrichloroethane.  
 DRO = Diesel range organics.  
 EPA = Environmental Protection Agency.  
 FAA = Federal Aviation Administration.  
 H = High bias.

ID = Identification.  
 J = The analyte was positively identified. The associated numerical result is an estimate.  
 K = Unknown bias.  
 L = Low bias.

mg/kg = Milligrams per kilogram.  
 MIC = Metlakatla Indian Community.  
 NA = Not analyzed.

Pes/PCHs = Pesticides and polychlorinated biphenyls.  
 PRG = Preliminary remedial goal.

Q = The result is estimated because it is below the Contract Required Detection Limit.  
 R = Rejected.

RRO = Residual range organics.  
 SVOC's = Semivolatile organic compounds.  
 START = Superfund Technical Assessment and Response Team (EPA).

U = The material was analyzed for but was not detected. The associated numerical value is the sample quantitation limit.  
 µg/kg = Micrograms per kilogram.  
 VOC's = Volatile organic compounds.

Table 3-13

**FAA HANGAR FACILITY  
SEDIMENT SAMPLES ANALYTICAL RESULTS SUMMARY  
ANNETTTE ISLAND, ALASKA**

START Sample ID	BG02SD	Washington Sediment Values <sup>a</sup>	Ecological Screening Benchmark <sup>b</sup>	HA04SD 98234387 Hangar Building
EPA Sample ID	98234375			
Sample Location	Background			
<b>Inorganics (mg/kg)</b>				
Aluminum	11,800	-	-	7,950
Arsenic	0.41	57	8.2	14.4
Barium	9.54	-	-	42.4
Beryllium	0.17	-	-	0.24
Cadmium	0.2 U	5.1	1.2	3.66
Calcium	818		-	2,220
Chromium	6.37	260	81	106
Cobalt	1.8	-	-	58.5
Copper	13.3	390	34	58.4
Iron	2,930	-	-	42,000
Lead	3.65	450	47	263
Magnesium	1,710	-	-	108,000
Manganese	35.2	-	460	606
Mercury	0.0793	0.41	0.15	0.361
Nickel	3.3	-	21	462
Potassium	110	-	-	509
Sodium	83.1	-	-	142
Vanadium	19.8	-	-	22.3
Zinc	7.46	410	150	1,060
<b>Pest/PCBs (µg/kg)</b>				
PCB-1254	NA	7.3	810	60
PCB-1260	NA	21	23	2,000

<sup>a</sup> Sediment Quality Values taken from, *Creation and Analysis of Freshwater Sediment Quality Values in Washington State* (Cubbage et al. 1997).

<sup>b</sup> Ecological Screening Benchmarks were taken from Oak Ridge National Laboratory's, *Toxicological Benchmarks for Screening Contaminants of Potential Concern for Effects on Sediment-Associated Biota: 1997 Revision* (Jones et al. 1997).

Note: Bold type indicates concentrations above sample quantitation limits or detection limits. Underline indicates concentrations above a comparison standard.

Key:

EPA = Environmental Protection Agency.

FAA = Federal Aviation Administration.

ID = Identification.

mg/kg = Milligrams per kilogram.

NA = Not analyzed.

Pest/PCBs = Pesticides and Polychlorinated biphenyls.

START = Superfund Technical Assessment and Response Team (EPA).

U = The material was analyzed for but was not detected. The associated numerical value is the sample quantitation limit.

µg/kg = Micrograms per kilogram.

Table 3-14

**FAA HANGAR FACILITY  
GROUNDWATER SAMPLES ANALYTICAL RESULTS SUMMARY  
ANNETTE ISLAND, ALASKA**

START Sample ID	MIC Groundwater Cleanup Levels	EPA Region 9 Tap Water PRG	EPA Drinking Water Standard (MCL)	Alaska Groundwater Cleanup Levels*	HA04GW 98234364	HG05GW 98234365
EPA Sample ID					Hangar Building	Hangar Building
Sample Location						
<b>VOCs (µg/L)</b>						
2-Butanone	-	-	-	-	2 U	7.5
Acetone	-	610	-	3,650	4.3 JL	86.8 JL
Toluene	6,800	720	1,000	1,000	1 U	1.2
<b>SVOCs (µg/L)</b>						
Naphthalene	-	6.2	-	1,460	4.4	0.42 U
Naphthalene, 1-methyl-	-	-	-	-	29.1	0.42 U
Naphthalene, 2-methyl-	-	-	-	-	44.1	0.42 U
Retene	-	-	-	-	9.6	0.42 U
<b>Alaska Methods (mg/L)</b>						
DRO (nC10-<nC25)	-	-	-	1.5	110	0.22
<b>Inorganics (µg/L)</b>						
Aluminum	-	37,000	50*	-	63,600	112
Antimony	-	15	6	6	R	1.6 J
Arsenic	-	0.045	50	50	19.3	1.1
Barium	-	2,600	2,000	2,000	722	33.8
Beryllium	-	73	4	4	1.49	0.04 U
Cadmium	-	18	5	5	3.91	0.045
Calcium	-	-	-	-	59,400	11,900
Chromium	-	180	100	100	186	1 U
Cobalt	-	2,200	-	-	388	1.3
Copper	-	1,400	1,300	1,300	326	21.9
Iron	-	11,000	-	-	168,000	114
Lead	3.2	4	15	15	172	1.21
Magnesium	-	-	-	-	253,000	33,300
Manganese	-	1,700	50*	-	5,400	35.6
Mercury	-	11	2	2	0.683	0.2 U
Nickel	-	730	100	100	1,480	9.57
Potassium	-	-	-	-	12,400	2,850
Selenium	-	180	50	50	3	1 U
Silver	-	180	100*	180	0.71	0.034
Sodium	-	-	-	-	9,000	8,040
Thallium	-	2.9	2	2	0.55	0.5 U
Vanadium	-	260	-	260	148	0.56
Zinc	-	11,000	5,000*	11,000	683	10.9
<b>Pest/PCBs (µg/L)</b>						
PCB-1260	-	0.034	0.5	0.5	4.1	0.82 U

\* Secondary Maximum Contaminant Level

The groundwater cleanup levels are consistent with or are more conservative than the Alaska Maximum Contaminant Levels (MCLs). Exception to this rule include nickel, silver, and zinc where the MCLs or Secondary MCLs are more conservative than the groundwater cleanup standards.

Note: Bold type indicates concentrations above sample quantitation limits or detection limits.  
Underline indicates concentrations above a comparison standard.

Key:

DRO = Diesel range organics.  
EPA = Environmental Protection Agency.  
FAA = Federal Aviation Administration.  
ID = Identification.  
J = The analyte was positively identified. The associated numerical result is an estimate.  
L = Low bias.  
MCL = Maximum Contaminant Level.  
mg/L = Milligrams per liter.  
MIC = Metlakatla Indian Community.  
Pest/PCBs = Pesticides and polychlorinated biphenyls.  
PRG = Preliminary remedial goal.  
R = Rejected.  
RRO = Residual range organics.  
START = Superfund Technical Assessment and Response Team (EPA).  
SVOCs = Semivolatile organic compounds.  
U = The material was analyzed for but was not detected. The associated numerical value is the sample quantitation limit.  
µg/L = Micrograms per liter.  
VOCs = Volatile organic compounds.